JUNE 11, 1960
VOL. 158 — NO. 24

Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY

Published ... by TELEPHONY PUBLISHING CORP. ... Subscription $4.50 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

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TERRAIN PROFILING

Plane used in aerial radar terrain profiling for outside plant construction and microwave radio projects. See page 21 for complete story of technique.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

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2200
JKL GHI DEF ABC
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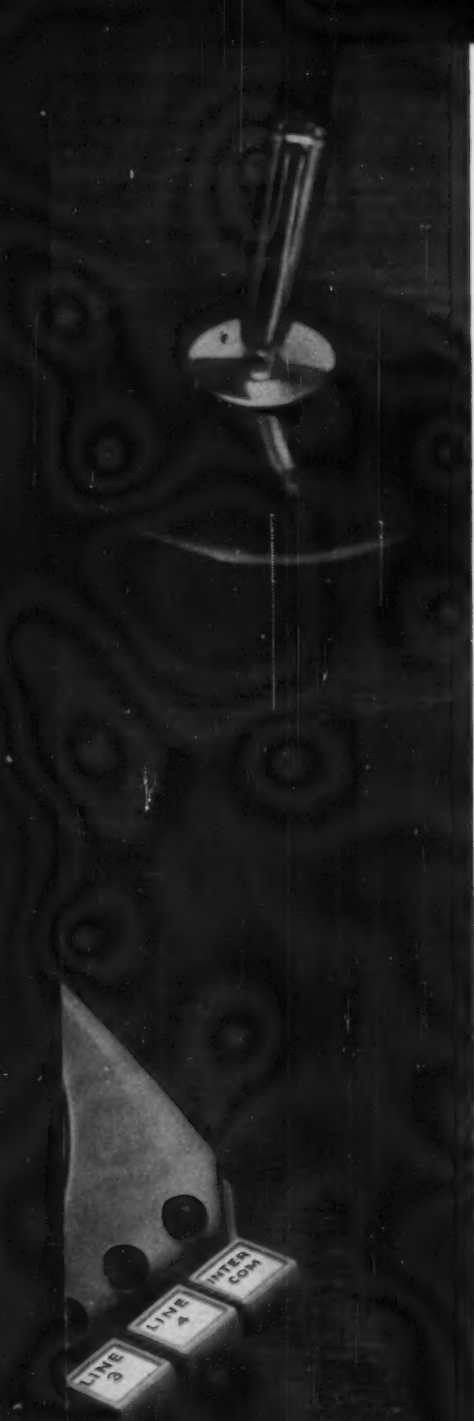

Compare the prices!

Want proof that 6K-1 multi-line equipment by Stromberg-Carlson costs you less than a comparable PBX system?

Compare! Here's what you'll find.

The price of the 6K-1 is competitive with the prices of other systems of the same type. The difference is that the 6K-1 costs you far less to install.

How come? This system installs in less time than any similar PBX. Your own people can do the job quickly and easily. No outside engineering help needed.

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Your subscribers get: small, easy-to-use 1575-W 6-line telephones. Selective signaling of up to 15 local stations. Exclusion feature. Tie-lines to other telephones. Audible plus visual trunk signals. Choice of colors. And more.

Get that price comparison now. The man to contact is your nearest Stromberg-Carlson representative. In Atlanta call TRinity 5-7467; Chicago: STate 2-4235; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200; San Francisco: OXford 7-3630.

STROMBERG-CARLSON
A DIVISION OF **GENERAL DYNAMICS**

REMEMBER

THIS

ADVERTISEMENT?

Where is the Guy who put up this guy?
STRANDVISE is made for strand sizes ¼", ⅜", ½", ⅝", and ¾" NO MATTER THE GRADE. Please pick your size, fill in the coupon and mail it today.
Reliable
Reliable Electric Company
West Carroll Avenue
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Signed
Company
Street No.
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State
This STRANDVISE guy was put up complete before any tensioning tools were applied to the strand

We found the missing Guy...

Here he is,
doing another job
with Strandvise...

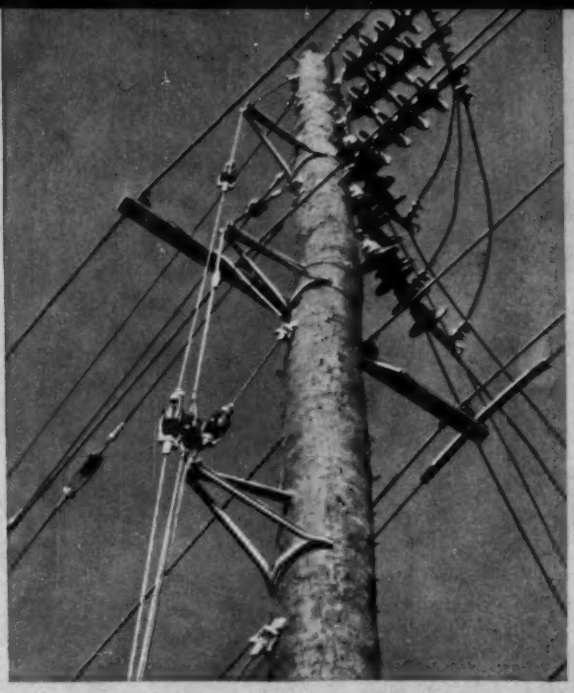
in 5 short minutes and
all by himself!

This man knows the safest, fastest, easiest way. He has deadended his guy at all points. It is complete, but slack. NOW he applies tension . . . and NOT UNTIL NOW. Tools have never been in his way.

Head-guys and

down-guys

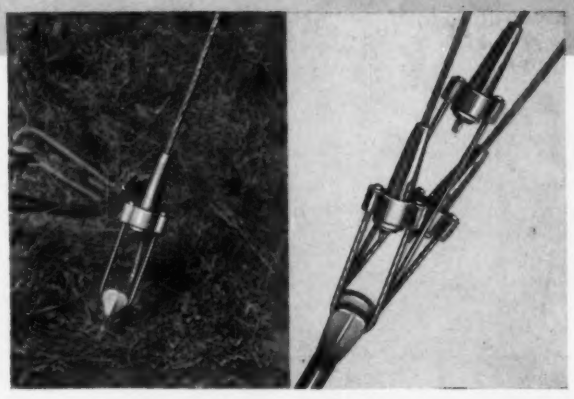
the Strandvise way



The fourteen Strandvises on these lines saved someone three to four $MH (man-hours).

take so little time, so little work . . . save you time-dollars!

More and more utilities are using Strandvise . . . the feed-through deadend that lets *one man* put up a guy in five short minutes. No tensioning tools are used until the guy is complete . . . just as easy for double or triple guys.



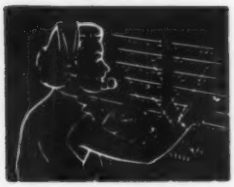
During more than 25 years of continuing production, it has never been reported that a Reliable deadend chuck let go a line.

Reliable

ELECTRIC COMPANY

11333 Addison Street • Franklin Park, Illinois

A Symbol of Integrity Since 1909



FLASHES AND PLUGS

HORSING AROUND. The Associated Press wires carried the following story on May 31:

"A farmer dug a hole Monday to bury a horse and, long before the horse was buried, this is what happened:

"Newswires from New York to Toronto, Ontario, were blacked out for an hour and 45 minutes.

"Thirty-eight Western Union lines between New York and Albany went dead.

"A number of telephone lines between New York and Albany as well as television circuits, stopped operating.

"The farmer, in his digging 7 miles south of Kingston, N.Y., had sliced through a major underground cable carrying direct wire communications between New York and Albany.

"American Telephone & Telegraph Co. said 120 channels were involved, including eight coaxial cables.

"At a late hour Monday night, all communications were being rerouted around the break and repairmen were trying to match up and connect 120 lines.

"No one seemed to know whether the horse ever got buried."

•

OH, THAT ACCENT! Illinois Bell's *Telebriefs* avows that while many a teenager has a reputation for being not too serious-minded, frequently, the opposite is true.

It was discovered however, when a Chicago radio station's Hi-Fi Club program offered teens the prize of a free telephone call to anyone in the world, just for writing an interesting letter, they often came up with surprises.

Many—both boys and girls—wanted to talk to pen-pals in every corner of the world. One girl wanted to talk to her pen-pal in England.

She explained, "I'd like to talk to him in person, because he writes with such a British accent I can't always decipher it."

•

NOT EVEN "ARSENIC AND OLD LACE!" In Paris, France, a processor of almond candies agreed to furnish sugar-coated almonds as stage props at the Marigny theater, providing the management gave a credit line on the program to this effect:

"The almonds have been furnished by the House of Martial."

In ensuing weeks, the House of Martial received many and mysterious telephone calls, which included inquiries about the content of the almond candies.

At length, the house of confections looked into the mystery and found that in the play, almonds were being used by a character named Lord Arthur to murder an aunt named Lady Clementine.

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

June 11, 1960

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Published every week on Saturday by TELEPHONY PUBLISHING CORP., 608 S. Dearborn St., Chicago 5, Ill. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879. 30c per copy (except special issues—50c). Subscription $4.50, 1-year; $7.00, 2-years; $9.00, 3-years. Add $1.00 per year for postage to Canada and Pan American countries; $2.00 per year to Foreign countries. Telephone WAbash 2-2435.

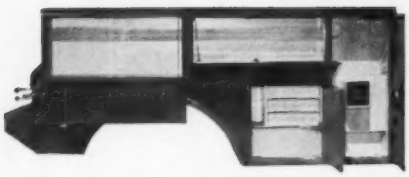
Holan "Space Vehicle" Hits the Road with Two-Day Payload

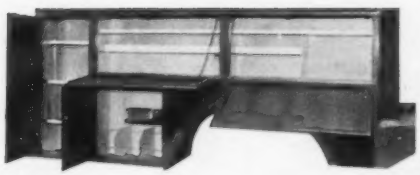
There's nothing "blue sky" about the space demands of a utility crew. To do the job — big or little — it takes a body engineered to squeeze the last ounce of payload from cab to overhang.

Holan's 5102-S Body does just that. In fact, this two-man work unit sports such functionally-designed compartments and so much room that a two-day supply of equipment can be carried without overloading.

Add to that the Model 25-C Derrick which can handle 8,500-pound loads and 60-foot poles and you have one of the industry's most economical, most efficient units. The work unit is mounted on a chassis with 72" CA and dual rear tires and has such a short body overhang that derrick load limits are appreciably increased before jacks are required.

Plenty of space . . . plenty of strength . . . and splendid for telephone, municipal, power company rural work and R.E.A. field assignments. Write today — or get in touch with your Holan Field Representative for complete details.





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extras...

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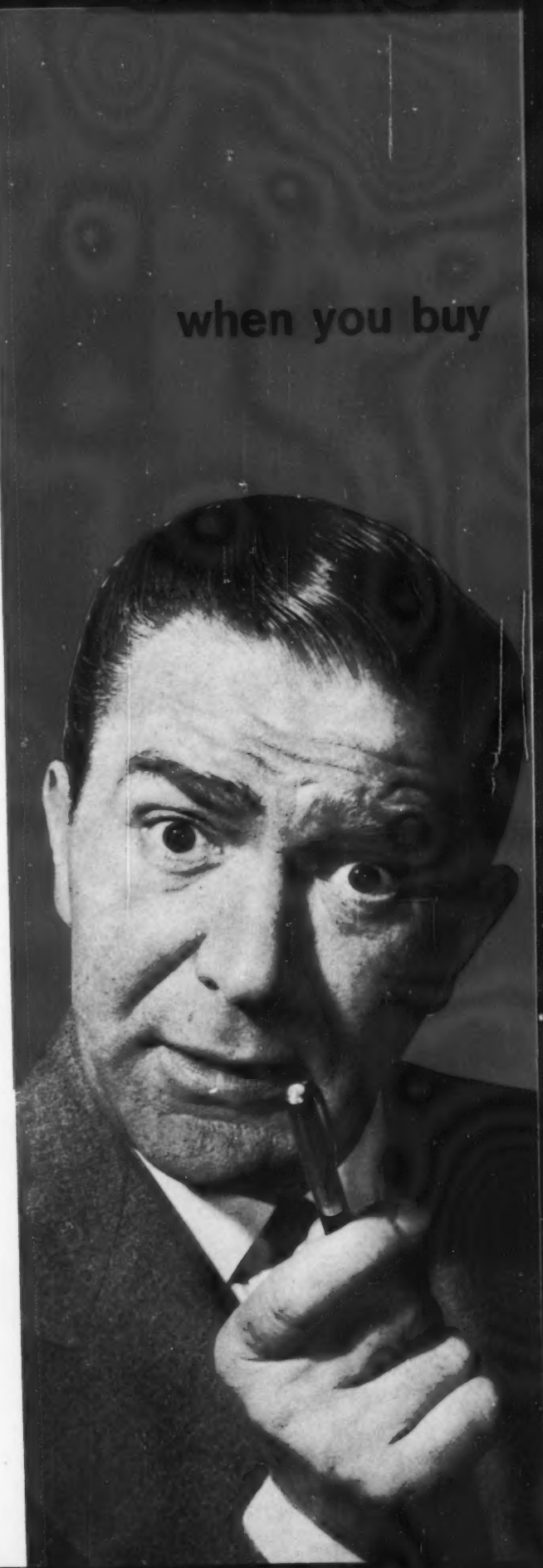

GENERAL CABLE from AE...

1 **More guaranteed pairs** on paper insulated cable. In 19 and 22 gauge cable, *all* pairs are guaranteed. General Cable has also increased guaranteed pairs in 24 and 26 gauge cable.

2 **Lower measured capacitances.** General Cable offers the same low unbalance limits for all standard sizes of paper insulated cable.

3 **Uniform sheath thickness.** Advanced manufacturing techniques insure uniform sheath thickness on all plastic cables.

4 **Guaranteed insulation resistance.** All gauges of paper insulated cable have a guaranteed insulation resistance of 1,000 megohm miles.

5 **Broadest product line in the industry.** General makes a cable for every communications need. Paper-Lead, Jute Protected, Steel-Tape Armored, Stalpeth, Rural Distribution Wires, Aluminum Sheath, Alpeth, Textile Insulated, Switchboard, Interior Wiring and Video Pair are all standard cables.

6 **Faster Delivery.** Some General Cable products are available from stock. Others are available in minimum time. Your AE representative will do his best to get the cable you want—when you need it.

warehouses:

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Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

Boost revenue with the

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Kellogg K-1A1

Here's how you can reap some of the extra monthly revenue to be earned from business subscribers.

Every business or professional office can profit from the added convenience and efficiency of a K-1A1 key telephone system. This means extra revenue for you in higher rentals and increased service.

Kellogg's K-1A1 has all the features businessmen want in a push-button telephone: complete flexibility, including added line capacity, HOLD button, intercom button (press and dial your party) . . . and a choice of smart colors that brighten any office!

Kellogg's K-1A1 has all of the features *you* want – recognized and accepted by your subscribers for its design and performance – optional arrangements to fit each subscriber's needs – lower maintenance costs – the industry's standard in quality and engineering.

Ask your Kellogg representative to give you all the details and help to work out a promotion program to help you sell the business and professional subscribers in your area.

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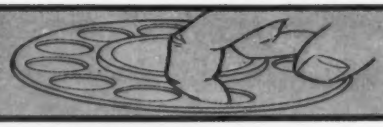
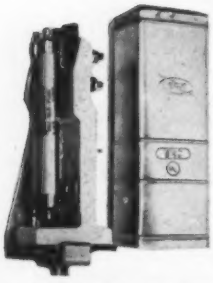
SUTTLE



SUPPLY LINES

SUTTLE — Suppliers of Equipment to Telephone Men — Since 1910



INDOOR OUTDOOR COOK PROTECTOR

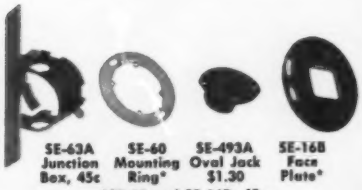
COOK ELECTRIC'S Type "O" Substation Protectors are a single circuit protector equipped with a pair of fuses and a pair of high-potential arrestors. The body is a single-piece, heavy glazed porcelain. Fuse and lightning arrestor clips are phosphor bronze fastened to the body in a single-piece, heavy glazed, on the reverse side, thus giving instrument wires maximum protection for the hot wire. In stock at SUTTLE'S Lawrenceville, Illinois, warehouse.

K-500 CONTROLS GIVE EQUAL TRANSMISSION

The KELLOGG K-500 standard battery desk telephone with increased transmitting and receiving efficiency, works equally well with all classes of common battery, manual or dial service. Better speech quality is obtained through shorter handset. New improved bias or harmonic ringers provided. SUTTLE carries them in stock.

DIAMOND WIRE QUICKLY AVAILABLE

For connecting open wires together or to cable terminals, DIAMOND WIRE offers its neoprene covered Bridle Wire. This rubber insulated, soft tinned copper wire offers exceptional strength and holding power. The neoprene insulation is *permanently* welded to the conductor. All types of DIAMOND Telephone Wire are stocked by SUTTLE in quantity and usually can be delivered immediately. Check SUTTLE'S prices *before* you buy!



SE-63A Junction Box, 45c — SE-60 Mounting Ring* — SE-493A Oval Jack $1.30 — SE-16B Face Plate*

*SE-60 and SE-16B, 45c

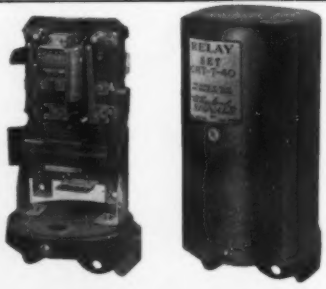
MODERN PLUG AND JACK ASSEMBLY

Latest telephone practice calls for use of the SE-63A (open) junction box, SE-60 mounting ring with oval SE-493A jack, and one of several types of the SE-16 series face plates. The SE-63A junction box screws into vertical wall studs (2" x 4" or other) and accepts the hardware assembly as above. Write SUTTLE or your local distributor for installation instructions on the above piece parts.

OUTDOOR Weatherproof JACK BOOSTS REVENUES!

Subscriber demands for outdoor, backyard, or patio telephone service are growing fast. The new SE-16151 Outdoor Weatherproof Jacks from SUTTLE "fill the bill" for every outdoor use. The non-corrosive, waterproof, aluminum receptacle houses the SE-493A jack. This new jack makes an excellent extension sale-revenue booster. Another SUTTLE *quality* product at low cost. Order now from SUTTLE or your distributor.

Price $6.50 each



WHEELOCK TELEPHONE RINGING RELAY SETS

All new aluminum indoor-outdoor housing. Lighter, easier to handle and install, WHEELOCK Relay Sets carry full U.L. approval for both indoor and outdoor service under continuous duty conditions. Prime applications include extension of telephone coverage in noisy areas, operation of remote visual or audible signals, and control of municipal sirens, whistles or horns. Order from SUTTLE!

For further information, specifications or quotations on these telephone supplies—write, wire or telephone

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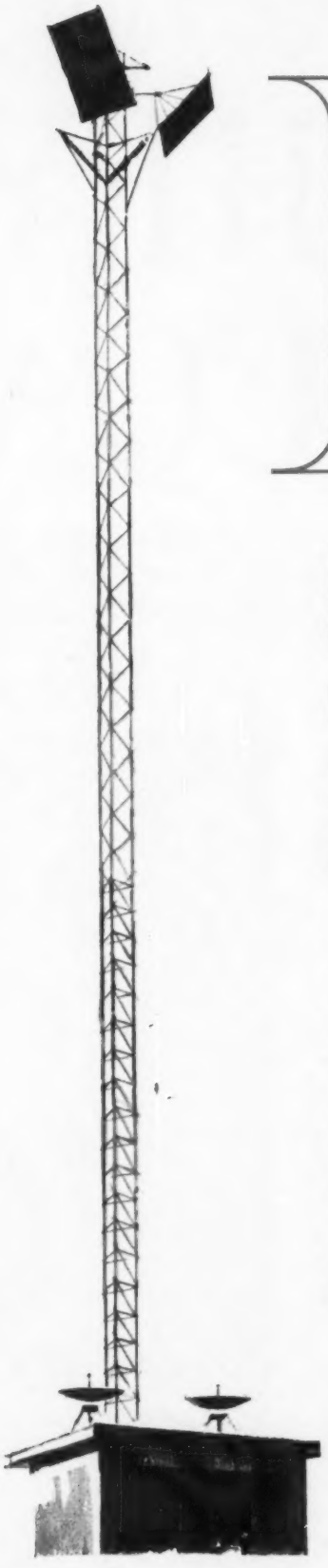

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DC-powered Collins microwave and carrier.

Collins now offers complete microwave and carrier multiplex systems capable of operating from a DC battery source. And because of the range of voltage combinations available with the new Collins equipment, you may choose the one that best integrates with your existing battery plant.

Check these advantages of Collins DC-powered microwave and carrier:

- ✓ Assures uninterrupted operation.
- ✓ Eliminates standby power equipment.
- ✓ Increases operating reliability.
- ✓ Reduces maintenance costs.
- ✓ Utilizes existing battery plants.

For information on how Collins may help you solve your own particular communications problem, contact Collins Radio Company, Texas Division Sales, 1200 N. Alma Road, Richardson, Texas.

COLLINS MICROWAVE AND CARRIER

COLLINS

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THEY LOVE ALCOA ALUMINUM BOOTHS IN WOOSTER OHIO

Installed at a heavy traffic location—Wooster's public square—this Alcoa Aluminum outdoor booth serves local residents and picks up additional revenue from transients.

"Never needs to be painted," says Mr. Ault, " . . . another reason our maintenance costs are negligible with Alcoa booths."

REPORTS E. V. Ault, Commercial Manager, Wooster Division, Telephone Service Company of Ohio:

"As a public service, we installed this Alcoa outdoor booth on the public square in Wooster, Ohio, in October, 1957. While our primary intention was to furnish additional convenience for our local subscribers, we are naturally pleased that the booth also contributes to our revenue requirements. This booth is so popular that its revenues average 15 per cent above the 79 other aluminum booths we have in the state."

Mr. Ault continues: "We like the Alcoa booth for other reasons, too. It's economical to maintain. It needs only routine sweeping and an occasional washing down. Our Ohio snows can't hurt it, so it never needs painting."

Telephone companies everywhere are discovering that Alcoa® Aluminum booths build revenue and customer goodwill. Learn how they can do the same for you. Write for free brochure . . . or ask your jobber to show you the Alcoa Goodwill Kit—the free promotional package that comes with every Alcoa booth. Aluminum Company of America, 1720-F Alcoa Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

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TRANSISTORIZED

"X" CARRIER SYSTEM

Check the signaling features for only Panhandle type "X" transistorized angular modulated cable carrier offers a simple and economical approach to them all.

1. **Ringdown.**
2. **E/M two wire or four wire.**
3. **Loop dial reverse battery (Direct selector level—selector for terminal or tandem office operation).**
4. **Simplex—two way (T/R and dial leg) operator office trunks (CLR and toll switch).**
5. **Foreign exchange service and PBX trunks.**
6. **PABX trunks with premonitory busy.**
7. **Operational special feature marking.**
   - **A. Automatic toll ticketing identification marking.**
   - **B. Controlled ring and rering.**
   - **C. Pay-station collect and refund.**

Panhandle auxiliary signal tone equipment makes available to the industry the first economical approach to multi signal carrier channels to provide unlimited control and marking features.

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"X" and "LL" systems marketed exclusively by

INTERNATIONAL TELETRONICS, INC.

644 BRANIFF BLDG.

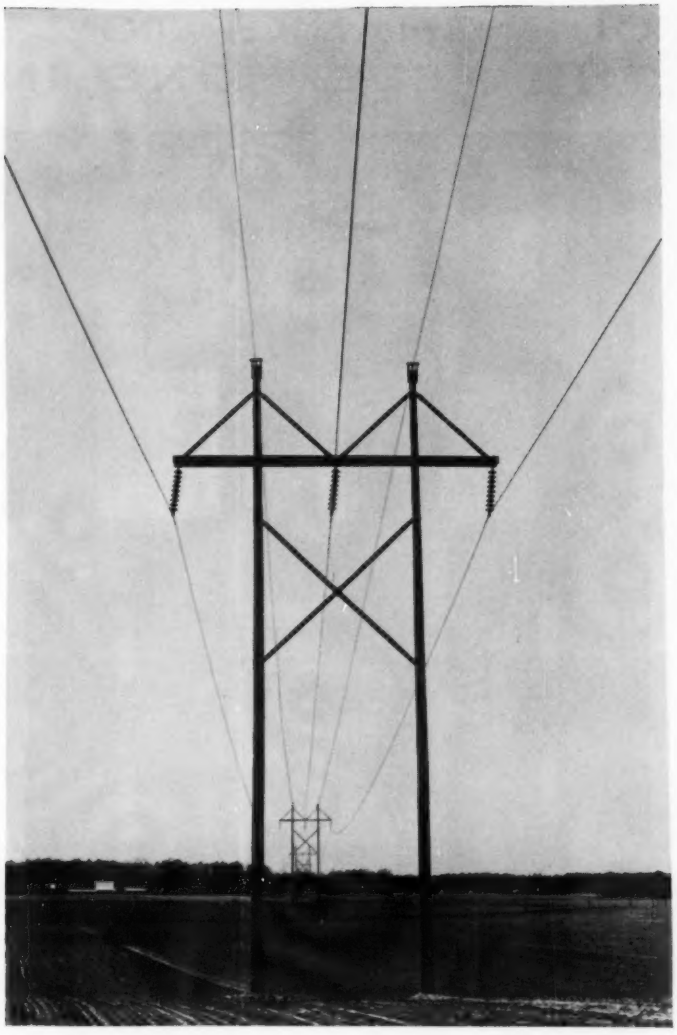
DALLAS 35, TEXAS TEL. # FL7-8353

For information and engineering assistance with your trunk signaling applications call or write to the above.

TECHNICAL SUMMARY

Voice frequency input level	4-wire operation — —16 dbm 2-wire operation — 0 dbm
Voice frequency output level	4-wire operation — +7 dbm 2-wire operation — —2 dbm or —4 dbm (with resistance hybrid and compromise network)
Normal HF channel transmitting level	—20 dbm
Maximum repeater gain at 336KC	20 db
Mean average noise for a 20 channel system contributed by terminals and repeaters using FIA weighting at 2-wire drop with filtered 48 VDC battery.	20 dba
Drop level stability (1) Properly engineered systems (2) Battery supply does not have variations exceeding ±5%	±.2 db
High frequency input-output impedance	135 ohms
Power requirements 20 channel terminals complete with 12 repeaters, one-way	4.15 amp. (maximum connectable load)
Channel audio response	300 to 3000 CPS to 3db points
Channel Modulation Index	5 radians at 1000 cps 0 dbm — 2-wire drop —16 dbm — 4-wire drop
Mounting Dimensions: Master oscillator or distribution amplifier (normally one per bay front mounted only)	4 rack spaces — 7 inches
"A" Group — 10 channels	17 rack spaces — 29¾ inches
"B" Group — 10 channels	16 rack spaces — 28 inches
"A" & "B" Groups — 20 channels	33 rack spaces — 57¾ inches

Bethanized Strand protects 54-mile power line



The conductors of this 54-mile, 138 kv line, which is owned by The Eastern Shore Public Service Company of Maryland, are protected by two overhead ground wires of ⅜-in. ASTM A-363 7-wire Bethanized "C" coated strand. The line, on the Delmarva Peninsula, originates near Millington, Md., and terminates at Vienna.

You can obtain just about any degree of protection against corrosion when you use bethanized strand. In the "A" weight, bethanized coatings are adequate for normal atmospheric conditions. They are also furnished in "B", "C" and "D" weights for added protection against corrosion in industrial and marine atmospheres.

The "D" coating, furnished in common, Siemens-Martin and high-strength grades, contains four times the weight of the "A" coating. The "C" coating is three times the weight of "A"; the "B" coating is twice the weight of "A". Each coating is 99.9 per cent pure zinc, and is applied by our unique electrolytic process which insures uniformity.

For full information on bethanized strand, get in touch with the nearest Bethlehem sales office.

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. . . Versatility

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THE TELEPHONE INDUSTRY FOR

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OF

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Representative Celler (D., N. Y.) pressures FCC to cut AT&T interstate toll rates. . . . In reply to Celler, FCC Chairman Ford indicates further negotiations between Bell System and Independents could affect reduction in Bell's earnings on interstate toll service. Discusses Wage-Hour Law changes.

EVER SINCE the first of the year, rumors have been bouncing around Washington that the FCC is going to have to consider lowering American Telephone & Telegraph Co.'s long distance rates again. This writer heard it last January in an FCC office, which must be nameless. Again during the Great Lakes Conference of Railroad and Utilities Commissioners at White Sulphur Springs, W. Va., late last April, the reports were going around among state commissioners that the FCC had actually undertaken a special study of Bell System operating results for latter 1959 and the first two months of 1960, with a view to cutting the long distance rates.

The truth of the matter is that, since early in the year, Rep. Emanuel Celler (D., N. Y.), chairman of the House Judiciary Committee, has been riding herd on the FCC to consider further toll rate reductions. As long as former FCC Chairman John C. Doerfer was at the helm, this pressure from Capitol Hill did not appear to be any more decisive than it has ever been. But with the increasing activity of the House Legislative Oversight Sub-committee (parading regulatory commissioners' shortcomings before the public view) plus the increased earnings on long distance toll business indicated at the annual stockholders' meeting of the AT&T, it now seems that some decision will have to be made. By the time the new chairman, Frederick W. Ford, took over, these factors had increased in significance.

In previous conversations with Washington personalities, in and out of government, on this matter, your correspondent has always been put under wraps. But the subject matter began to hit the gossip columns last month. So there is really no violation of confidence in bringing this matter to the attention of the readers of this department at this time.

The pace of Representative Celler's communications with the FCC shows an increasing insistence that something be done about reducing the Bell System interstate toll business earnings through a rate cut. Celler said last February that he thought a reduction of 70 million dollars was indicated, based on a rate of return of 6½ per cent. The New York congressman did not pluck this 6½ figure out of the air. It was evidently based on the FCC's own calculations when the long-haul rate revisions were made last year.

It may seem impolite to talk about "pressure," but it is only being realistic in these days of congressional investigations and counter-investigations. (Remember those expense accounts?). Under the law and in theory, the FCC is an independent quasi judicial tribunal. Neither Congress, nor any committee of Congress, nor any member of Congress has any more power to tell the commission what to do about matters under its own jurisdiction, than the White House.

But the New Yorker knows from long experience that there is more than one way to get a watermelon. Two years ago, through his anti-trust subcommittee, Representative Celler went into the matter of the consent decree by which the Justice Department settled its anti-trust suit to divorce Western Electric from the Bell System. At that time, Celler said he thought a 150 million dollar reduction in interstate long distance rates was in order. In due course of time, and with no ostensible connection to the congressman's extra-curricular demand, the FCC ordered a 50 million dollar reduction. Congressman Celler would have been less than human, much less a politician, if he had failed to take a bow, publicly, on this occasion.

So, this being an election year, and with the AT&T financial goose hanging high, while the FCC prestige does not seem so high on Capitol Hill, Representative Celler is evidently trying for an encore. We must not overlook, however, the fact that the FCC has been studying AT&T financial records for more than a quarter of a century. It does this as a matter of routine, without any prompting from congressional committee chairmen. More than that, the FCC has ordered long distance rate reductions repeatedly over the same period. And it will go on doing this, as a matter of statutory obligation.

So, what will come of the latest gambit from Congressman Celler's office is still a questionmark. If pending FCC studies of the AT&T return on interstate business show—after consideration of other pertinent factors—that a reduction is in order, it will be forthcoming—just as it has a dozen times in the past. It could be, however, that the New York congressman has developed a good sense of timing.

"When the fig tree putteth forth its shoots and leaves ye know that sum-

mer is nigh." (Matthew 24:33) Chairman Celler would like to be around for the harvest, if any.

The Independent Angle

That brings up, however, an important question of the impact of any further toll rate cut on Independent telephone companies. It seemed to this writer that FCC Chairman Ford, in his letter to Representative Celler, dated Apr. 27, left the door open to further negotiations between the Bell System and the Independents on toll settlements which would have the effect of reducing Bell System earnings allocable to interstate long distance service.

Chairman Ford's letter points out that the commission has been studying operating results of the Bell System for the first five months following the toll message rate reduction which became effective on Sept. 19, 1959. Chairman Ford's letter states:

". . . It appears from these data that for the five months subsequent to the rate reduction, the interstate operations of the Bell System have been producing a ratio of net operating income to net book cost of plant in a range of 7.3 per cent to 7.6 per cent, which is above the level the commission anticipated would result from the reduction. It is our view, however, that any definitive evaluation of the impact of the rate reduction on, and the current trends in, the annual level of interstate earnings should await the availability of additional monthly operating results. In this connection, it is to be noted that interstate operations for the five-months period of October through February generally reflect a higher level in relation to other periods of the year. Moreover, in another few months we will be in a better position to ascertain the status of the pending NARUC-FCC joint study of telephone separation procedures, referred to below."

This would seem to indicate that both the FCC and the National Association of Railroad and Utilities Commissioners (on behalf of the state commissions) would be receptive to any negotiated readjustment of toll separation which the Bell and Independent companies might arrive at and agree upon. The proportion of such readjustment might not in itself be large, from a relative standpoint; but it would tend to correct any misleading impressions about Bell toll earnings which might arise on the basis of separation procedures still in dispute.

One allied point raised in Chairman Ford's letter of Apr. 27 to Congressman Celler indicates that the FCC is not going to be pushed around or rushed through a rate reduction with the House Judiciary Committee breathing down its neck. That has to do with the so-called "disparity factor." Chairman Ford's letter states on this:

"One additional factor that is currently involved in the regulation of interstate long distance telephone rates and earnings is the disparity which exists between the interstate rate schedules and the rates for intrastate services for comparable distances which are subject to the jurisdiction of the several states. It has been urged by the various state commissions that this disparity is largely attributable to inequities in the so-called separation procedures. These procedures, which have been jointly developed over the years by the FCC and the state commissions, are employed in the Bell System to allocate investment and expenses associated with telephone plant and property used in common to render both intrastate and interstate services. It is the feeling of the state commissions that the procedures do not produce a sufficient allocation of joint costs to the interstate service.

Pursuant to a resolution adopted by the National Association of Railroad and Utilities Commissioners at its 1959 annual convention, further studies of the separation procedures are currently in progress. Should these studies culminate in revision of the procedures thereby increasing the amount of Bell System investment and expenses assigned to the interstate jurisdiction, it could result in a material reduction in the level of interstate earnings as currently computed under the existing methods of separation. It should be understood, of course, that any such revision would have to be acceptable to this commission."

When the next definite development will come in this situation is anybody's guess. But indications are that the FCC cannot go on "studying" the matter indefinitely. It will have to do something, even if it amounts to no more than telling Representative Celler, in effect, "nothing doing."

The Bugged Spike Case

The U. S. Supreme Court agreed last week to decide whether evidence obtained by slipping an eavesdropping device through the wall of a house is admissible in a federal criminal trial. This is the celebrated Case of the Bugged Spike, mentioned in this department several weeks ago, when such evidence was upheld in a lower court. The Supreme Court will hear arguments in the case next term. Its decision may bring another clarification of the Constitution's guaranty against unreasonable searches and seizures, and the interception of private conversation through electronic devices.

The case was brought to the court by three District of Columbia men who were convicted for gambling offenses. They drew jail terms of from 20 months to five years and $1,000 fines, despite their objection to the police tac-

(Continued on page 64)

Recent Quotations of Independent Telephone Stocks

	6/1/60 BID	6/1/60 ASKED	4/29/60 BID	4/29/60 ASKED	Current Indicated Dividend Rate
Anglo-Canadian Tel. Co.	39½	40¼	42¾	43¾	$1.20
British Columbia Tel. Co.	44½	45	44¾	45½	2.20
California Interstate Tel. Co.	12¾	13¼	13¼	13⅝	.70
California Pacific Utilities Co.	19¾	20½	18¼	19	.90
California Water & Tel. Co.	28	28⅝	26¾	27¼	1.28
Carolina Tel. & Tel. Co.	38	40	37½	39	1.60
Central Tel. Co.	21	21½	20⅞	21⅜	.88
Chenango & Unadilla Tel. Corp.	26	27½	25½	27	1.35
Cincinnati & Sub. Bell Tel. Co.	91	92	89½	90½	4.50
Citizens Utilities Co. "A"	14⅛	14½	13⅝	14	Stock div.
Citizens Utilities Co. "B"	13⅝	14	12¼	12⅝	.52½
Commonwealth Tel. Co.	20½	21¼	20	20¾	.90
Florida Tel. Corp. Class A	28½	29¼	29	30	1.00
*General Tel. & Elec. Common	*32¼	Close	82	Close	.76
Hawaiian Tel. Co.	21⅞	22⅜	21¼	22	1.00
Indiana Tel. Corp.	23	26	22	24	
Inter-County Tel. & Tel. Co.	70	75	70	74	2.00
Inter-Mountain Tel. Co.	15¾	16¼	15¾	16¼	.80
Jamestown Tel. Corp.	85	Bid	80	Bid	5.60
Lincoln Tel. & Tel. Co.	63½	Bid	60	Bid	2.60
Lorain Tel. Corp.	33	Bid	32	Bid	1.40
Middle States Tel. Co. of Illinois	30	31	25¼	26¼	1.00
North Carolina Tel. Co.	1⅛	1⅜	1	1⅛	
Northern Ohio Tel. Co.	53	55	49½	52	1.60
Peoples Tel. Co.	92	Bid	92	Bid	4.00
Pioneer Tel. Co.	36	38	36	38	2.50
Rochester Tel. Co.	24⅛	Close	24⅛	Last sale	1.00
Southeastern Tel. Co.	21¾	22¼	21¼	22	.90
Southern Nevada Tel. Co.	22½	23½	21½	22½	1.00
Southern New England Tel. Co.	43¼	43¾	44¼	44⅝	2.20
Southwestern States Tel. Co.	23½	23⅞	24	24½	1.20
Tel. Service Co. of Ohio Class A	175	Bid	165	Bid	1.90 + Stk.
Tidewater Tel. Co.	25	27	25	27	1.40
United Utilities, Inc.	39½	40	41½	42	1.40
West Coast Tel. Co.	24¾	25¼	24½	25	1.20
Western Light & Tel. Co., Inc.	43½	44½	42¼	43	2.00
Western Utility Corp.	7⅝	8⅛	7¾	8⅛	.36

*after 3 for 1 split

(Quotations supplied by Merrill Lynch, Pierce, Fenner & Smith)

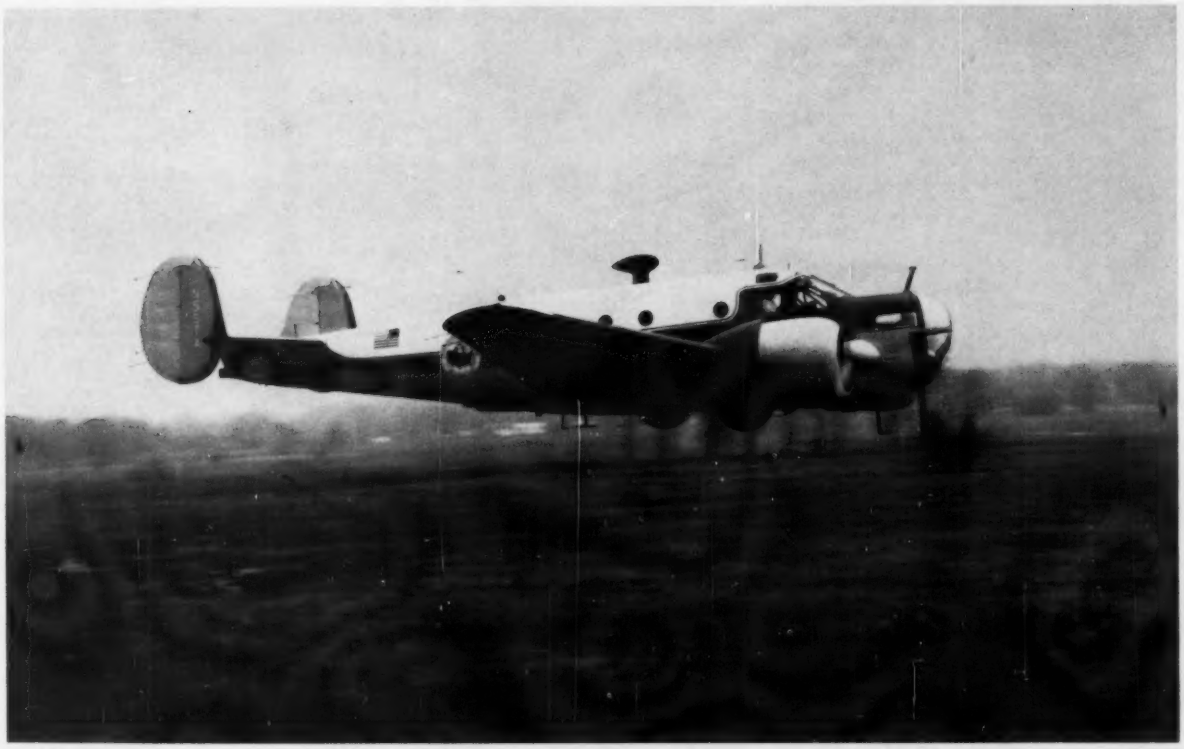

Fig. 1. Survey aircraft, Type AT-11 Beechcraft, carries survey crew of two, plus all electronic measurement equipment.

Terrain Profiling Electronically

By W. C. EDDY, R. C. WARREN and N. L. NOVEROSKE*

HAVE YOU seen a low-flying twin-engine orange-and-green aircraft buzzing around lately? If so, chances are you've witnessed the Television Associates of Indiana aerial radar profiling team in action. In the U. S. or abroad, in hot weather and cold, over mountains or forests, on work-days or holidays, there seems to be no limit restricting the operation of the survey crew unless it might be that they can work only in daylight. It can't be said that we're a "fly-by-night" outfit.

Our company first began to survey microwave communication systems in 1946 with the first version of its airborne radar profiling equipment which has, since that time, been steadily improved in reliability and accuracy.

Realizing that neither the photogrammetric coverage nor the ground survey approach satisfied the communication engineers' needs, Television Associates of Indiana undertook an investigation of a method which would economically and quickly produce the required data along a specified path. This investigation was first directed to the requirements of surveying for microwave routes where the prime requisite is data concerning terrain elevations along a straight-line path between proposed stations.

Equipment was developed which, when used in aircraft flying at altitudes between 100 feet and 800 feet above ground, could measure and record the terrain elevations along the path traversed by the aircraft.

Incorporated in this specialized equipment are a precision vertical radar and an extremely sensitive electro-pressure strain gauge. Outputs from these units are integrated in the computer circuit to give a direct reading indicative of the actual terrain elevation and this output is then fed into a strip chart recorder so that a continuous profile of actual terrain elevation is produced.

This terrain profile of the path flown is thus available immediately upon completion of the measurement flight over a path, and results in an immediately available, local sector, high accuracy survey at low cost, even in areas where access by ground is extremely hazardous and difficult.

To date, we have performed terrain profiling surveys for many clients, among which are various telephone companies, pipeline companies, toll road systems, and railroads. Some of the latest projects are in the Middle East and Southeast Asia, where Television Associates, in addition to surveying the CENTO and SEATO communication

*Messrs. Eddy, Warren and Noveroske are President, Chief Engineer and Engineering Assistant, respectively, of Television Associates of Indiana, Inc., of Michigan City, Ind.

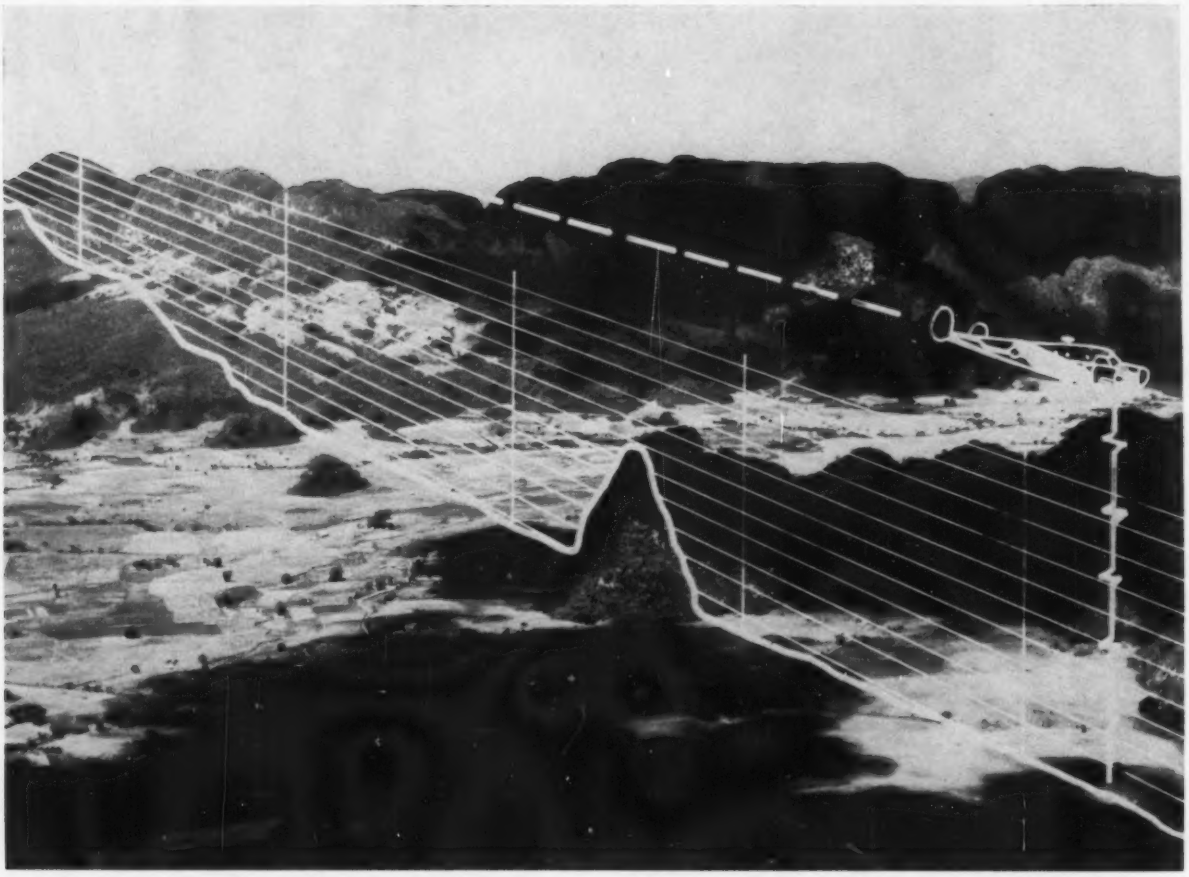

Fig. 2. Picture-graph depicting grid lines and contour of terrain on path flown by measurement aircraft.

systems, is also prime contractor on the engineering and construction phases of the projects; and in Brazil where we surveyed a system connecting Rio de Janeiro and Brasilia, the new capital, via Belo Horizonte and Uberaba.

Our aerial survey method has been used on systems involving microwave routes whose total distance approaches 30,000 miles. This represents nearly 60,000 miles of measurement flying, since in microwave communications work the aircraft retraces each path to verify profiles.

While this system provides obvious economies in time, personnel, and equipment over other methods available (in one of our most recent efforts, that in Brazil, nearly 1,200 route miles were profiled and sites ground-checked in 50 days by our survey crew of three, who also effected site selection throughout the system), the actual per-mile cost is dependent upon the length of a given job.

Therefore, cost figures on any assignment must be quoted specifically. Experience has shown, however, that the total costs of completing a survey are less with this method than with any other giving comparable guaranteed results.

Aerial Survey Procedures

Pre-Flight Planning. The physical configuration of the proposed microwave network is generally established in one or more pre-flight conferences between the client and the survey crew personnel. In these conferences, the basic requirements of the system, covering required service locations, necessary qualifications for acceptable tower sites, and any special conditions applicable, are agreed upon and the preliminary site location areas marked on the flight map. The maps generally used for preliminary planning are of the largest scale obtainable, procured by TAI prior to the beginning of the survey.

Surveillance Flights. Necessary surveillance flights are made to check the proposed route through the area. Usually the client's representative accompanies the pilot and co-pilot on these flights.

During these flights specific site locations in the designated areas are chosen or identified, paths which obviously do not have clearance are rejected, paths to be measured are authenticated and the various possible alternate routings are computed.

The selected site locations are then accurately located on the flight charts. These flights are conducted at normal flight altitudes with insurance coverage provided by Television Associates for the client's personnel.

High-Level Reconnaissance. Following the surveillance flights, intermediate level reconnaissance flying by the survey crew is carried out in which the straight point-to-point flight line between adjacent sites is determined, and the check sheet listing identifiable points, trees and estimated tree heights along the path is compiled. The flight line determined at this time may be, or may not be, identical with that shown on the map due to map errors, but it is determined definitely in the air by locating the two sites and several main points on a line between them.

On a second run over the path, detailed check points, usually two or three to the mile, are selected and recorded, so that on the low-level measurement flight, at any one time, at least

three such points are visually in line, insuring straight-line flights. Oblique photographs of the selected sites are taken during these reconnaissance flights. These site photographs are included in the final reports, in the form of black and white 8½-inch by 11-inch enlargements.

Low-Level Measurement. Immediately prior to the low-level measurement flight, the calibrated pressure altimeter in the airplane is set to the barometric pressure reading reported for the area by the U.S. Weather Bureau. With the airplane airborne, all electronic equipment is energized and operated at normal load for sufficient time to stabilize.

Following the stabilization period, the airplane is flown at a constant predetermined altitude, using the calibrated pressure altimeter within the range of the Terrain Deviation Altimeter (designed and developed by Television Associates) where the electro-pressure strain gauge is adjusted to establish this elevation as a reference platform.

Then conformity between the radar altimeter, the electro-pressure strain gauge, and the electronic computer-recorder is obtained by calibrating the computer during short runs at varying altitudes over a referenced area of land or a body of water. With equipment thus calibrated, the measurement run is started.

Beginning at a sufficient distance so that the equipments are stabilized, the airplane is flown over the site at approximately 200 feet altitude above the ground, continuing in a straight line to the next site by following the points listed on the check sheet. The airplane maintains altitudes between 100 feet and 800 feet above ground, which are within the sensitive range of the radio altimeter. In areas of considerable variation in ground elevation, it becomes necessary to change the airplane's altitude in order to accomplish this.

It is generally impractical to allow the measurement airplane to follow the radical contours of a deep valley and then climb to a high point without affecting strain gauge accuracy. But it is obvious that such gorges, or deep narrow valleys, with terrain elevations 800 feet or more below the beam path, will not present obstructions to the path of transmission, provided the path possesses adequate shields for reflected signals.

Such areas are normally flown at gradually varying altitude with the out-of-range measurements over these gorges, or deep valleys, recorded as "below range" on the profiles. In following such procedures the crew maintains a constant in-flight visual check as to the character of the terrain in the valley or low area.

During the measurement flight, measurements are continuous and are recorded on a highly sensitive strip chart recorder as a profile of the measured terrain. An indication of the location of each site and pertinent check points is recorded along the base of the strip chart profile as the airplane passes over the sites and points. This record is for later determination of profile terminals and correlation to or correction of maps.

Post Flight. At the end of each day's flying, all data concerning the paths measured is turned over to the ground base. Aerial films are developed and contact prints made and marked with pertinent information. The strip chart profiles are traced, heights of trees or

(Continued on page 58)

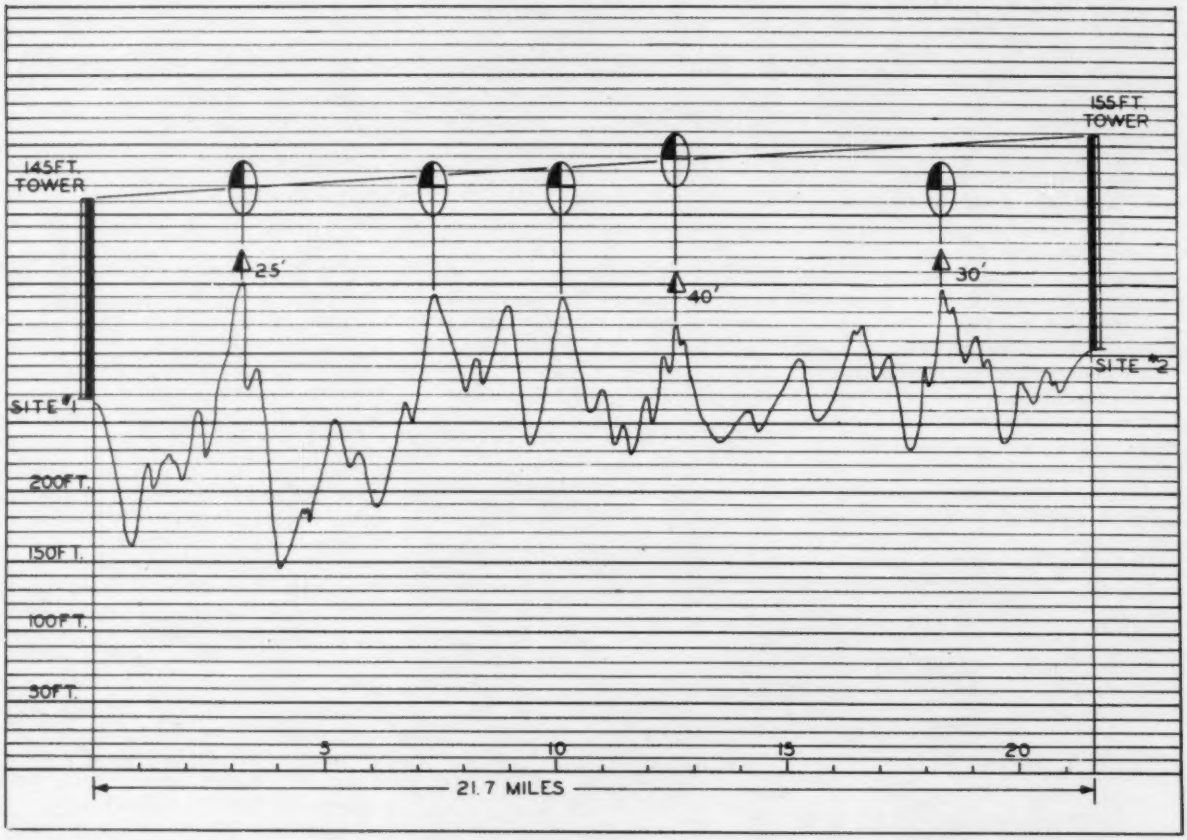

Fig. 3. Radar profile of type appearing in final study report. Indicates required clearances at all critical obstructions, tower heights necessary for satisfactory transmission, earth curvature, fresnel zone and frequency criteria for computing clearances, etc.

Annual Review of

NEW PRODUCTS AND TECHNIQUES

By RAY BLAIN

THIS IS THE second article in a series describing various new items of equipment and their application in telephony. The first article appeared in the June 4 issue.

Readers desiring additional information on any of the products described, should write the manufacturers or TELEPHONY.

* * *

Ticket Printer (Fig. 9). A new ticket printer developed by Automatic Electric Laboratories provides advantages of fully automatic toll ticketing for telephone companies that, for reasons of limited toll volume, or commercial policy, do not use punched card accounting equipment.

Designated as the Type 57 Ticket Printer, it transcribes information from toll tickets. These tickets, preprinted with the identification of each item, can be microfilmed for accounting records, and then can be sent to the customer with his monthly statement.

The new system consists of the following separate components:

(1) A motorized tape reader which reads the perforated toll tape and transmits the information to the "Printroller." The Printroller, the system's main control equipment, consists of relays and stepping switches, and a battery eliminator which provides a voltage-regulated dc power supply so that this equipment may be used in accounting offices remote from the telephone exchanges.

The Printroller receives the information from the tape in coded code (four-element) and translates it to a form that will operate the ticket printer. It also inserts line spaces, carriage returns, etc., as required, to fill out the ticket.

(2) The Ticket Printer, an electric typewriter arranged for electric control of the figures and machine functions (spacing, carriage return). A pin-feed platen insures proper registration of the preprinted paper for the tickets. The typewriter is equipped with a variety of alarms to guard against absence of paper, improper paper position and other malfunctions.

(3) The Supervisory Unit, containing a ticket counter and facilities for alarm and supervisory signals.

A steel cabinet—3-feet wide, 2-feet deep and 3½-feet high—is available. The ticket printer, mounted on rubber feet, and the supervisory unit, rest on top of the cabinet. The tape reader and a ticket feed bin are located on a shelf in the cabinet. The Printroller, complete with dc power supply, and the printed ticket return bin are located in the lower compartment of the cabinet. The cabinet is equipped with two vertical steel doors. A 12-foot cord is supplied to connect to commercial power.

In small exchange areas, one Type 57 Ticket Printer, whose printing rate is about 400 tickets per hour, can be centralized to serve several offices. In larger exchanges, the manufacturer recommends one ticket printer be restricted to a single office.

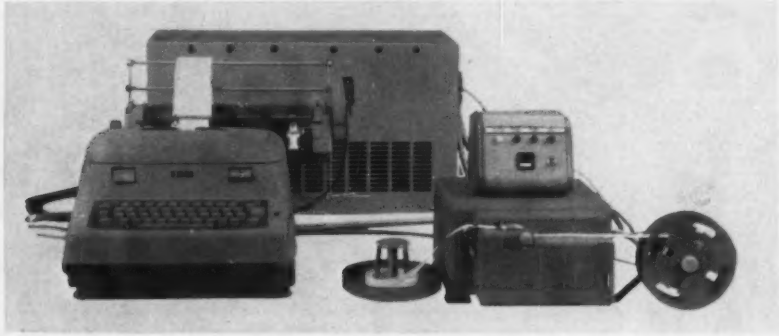

Fig. 9. New SATT ticket printer.

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Municipal Emergency Reporting System (Fig. 10). A municipal emergency reporting system, providing direct telephone communications from street boxes to police or fire department headquarters, has been developed by Automatic Electric Laboratories.

With the new system, the public has instant voice contact with fire department headquarters by simply picking up a telephone handset located in a weather-proof cast aluminum street box. A trained operator at the fire headquarter's switchboard can request details before notifying the appropriate station. Light and audible signals continue on the switchboard even after the caller has hung up his street box telephone.

The system also offers special restricted police department communication. Authorized police and city personnel get direct connection to the police department console by pressing a recessed button and picking up the handset. The police department operator can transfer the call directly to

Fig. 10-A. Emergency reporting telephone with cover closed.

a specific section, or can obtain the necessary information and relay it to the proper division.

Each call is instantly recorded on an automatic typewriter which types out the street box number, as well as the time and the date a call is made. The conversation may also be voice-recorded on tape and stored for future reference.

Fig. 10. Municipal emergency reporting system.

Open lines or acts of vandalism to the instrument or the telephone cord are reported automatically to headquarters.

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Standardization of Telephone Booths (Fig. 11). Sherron Metallic Corp. carries a total of 30 basic standard models of telephone booths. Of these, 13 are stainless steel, and 17 are zinc-coated steel with baked enamel finish. In each of six models for each material, there are four list variations for multiple arrangements. In all, there are 78 basic possibilities before considering finish colors, of which there are 10 standards for the zinc-coated steel booths.

In addition, a complete line of optional equipment is available to suit every booth usage. Among these are seats, ventilators, photo switches, booth separators and numerous directory facilities.

Certain parts, such as corner posts, bases, ceilings, doors, backboards and shelves make up the basic framework for different models. To this, then, may be added a variety of side paneling: Half panel glass, quarter panel glass, solid steel panels, acoustic steel panels or closure moldings. (The closure molding makes possible single glass panel construction—permitting joined multiples and making for easy maintenance.) Various roof assemblies, signs or blanks, and optional equipment complete the assembly to the required specification.

Standardization does not end with factory assembly. Interchangeability of parts continues into the field, and a booth may later be converted to an entirely different model and usage. Further, it permits assembly in the field of any required model and type of booth from stocks of standard parts.

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Air-Conditioned Booths (Fig. 12). Sherron Metallic Corp., in conjunction with Carrier Corp., has developed a new type of air-conditioning for telephone booths that is applicable to several of the standard Sherron models.

Fig. 11. Standard booths in multiple installation.

Fig. 12. Aperture for air-conditioner in booth ceiling.

Carrier designed a completely new air-conditioning unit to fit in a conventional 30-inch by 30-inch booth. The unit has an extremely high capacity, but draws very little current. Notable among the problems overcome because of space limitations was the inclusion of a fluorescent lighting system to provide adequate interior lighting as well as illumination of signs.

In operation, the air-conditioning unit maintains a pre-set temperature in an upper air chamber. When the booth is in use, the door switch actuates a blower system to supply the conditioned air to the booth interior.

At the present time, several air-conditioned Sherron booths of various models are undergoing exhaustive tests for field usage in strategic locations. Upon completion of the tests, full details will be announced.

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Coin Collector Desk (Fig. 13). This recent development in paystations, by Esso Products, is being used in various

(Continued on page 28)

HERE'S HOW ANACONDA DIRECT BURIAL WIRE & CABLE MAY SAVE YOU MONEY

New advances in insulation and jacket materials, termination equipment and plowing techniques now, make Direct Burial Wire and Cable Systems more economical in many areas.

Telephone wire and cable plants are now being buried directly in the earth.

That's where Samuel Morse attempted to place the first commercial line in 1843. He designed a direct burial, fully color-coded cable for America's first telegraph line between Washington and Baltimore, but his insulation proved defective and Morse was forced to take the conductors out of the cable, separate them and string them on poles with crossarms.

Now, the four freedoms of buried plants – (1) freedom from storm damage, (2) freedom from tree clearing and retrimming expenses, (3) freedom from the safety hazards associated with power contacts and pole climbing, and (4) freedom from right-of-way procurement difficulties – can be yours at actual savings in cost.

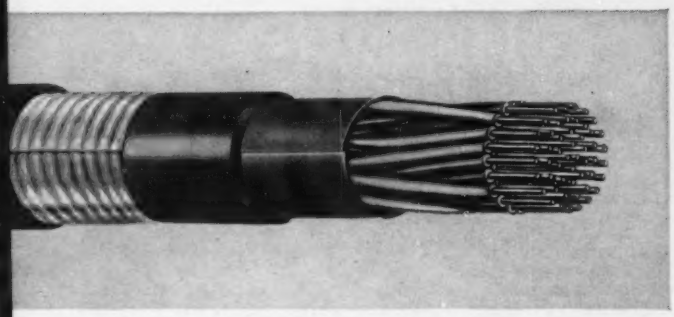
Anaconda's high-molecular weight polyethylene insulation – tough and resistant to many direct burial hazards – is part of the reason. The use of this rugged, crack-resistant material, together with new terminals and new plowing developments, have overcome most of the problems that formerly stood in the way of economical direct burial applications. Now in selected areas, a direct burial system may cost you less – in initial installation and in maintenance – than an aerial plant!

On the following pages, you will find pertinent questions and answers that show why and how Anaconda direct burial wire and cable may make possible important savings. Read these pages. Then give careful consideration to direct burial wire and cable for *your* telephone system.

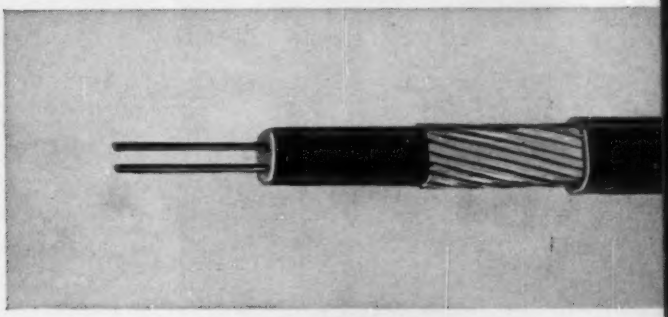
THE INSIDE FACTS ON

THE CONSTRUCTION OF ANACONDA DIRECT BURIAL TELEPHONE WIRE AND CABLE

See for yourself why Anaconda Direct Burial Telephone Cable resists underground hazards . . . gives long life and dependable service



TYPE PCP AND PCPG



TYPE BW

DIRECT BURIAL CABLE:

Cable Core: Conductors insulated with high-molecular weight color-coded polyethylene provide excellent electrical properties with great mechanical toughness and crushing resistance.

Inner Jacket: This inner jacket consists of high-dielectric strength polyethylene. It provides a second line of defense against moisture penetration in the event that the outer jacket is damaged. It also provides a high-dielectric strength barrier against lightning impulse breakdowns between the pairs and the shield.

Shield: The PCP type has 5 mils of longitudinally applied *copper* tape, rather than aluminum tape used in aerial cable. The copper provides a corrosion-resistant, low-resistance shield. This shield, coupled with the high-dielectric strength of the inner jacket, makes the over-all cable highly resistant to lightning damage. The copper shield also provides mechanical protection against the attacks of termites and rodents.

In areas where gophers are known to exist, additional protection against attacks by these rodents has been found necessary. For this purpose, the copper shield thickness has been increased from 5 mils to 10 mils and cables with this shield thickness are designated PCPG.

Outer Jacket: High-molecular weight polyethylene, highly resistant to abrasion, weathering, moisture, fungus, corrosion and environmental cracking.

DIRECT BURIAL WIRE:

Insulation: Conductors insulated in parallel with black high-molecular weight polyethylene. The insulated core has a rounded oval shape to facilitate tight fit of the steel armor wires – thus minimizing capacitance unbalance to ground.

Shield: A helical serving of closely spaced flat steel wires for mechanical protection against attacks of termites and rodents. The shield wires are flooded with an asphaltic base compound to resist corrosion. The shield, coupled with the very high-dielectric strength of the core, provides excellent resistance to lightning damage. The helical method of application of the shield wires also results in their contributing substantially to the tensile strength of the wire (over 400 pounds) which is needed to withstand stresses in installation and operation.

Outer Jacket: A tough, flexible thermoplastic jacket provides added mechanical protection for ease of installation and longevity of operation.

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the independent manufacturer for the independent telephone industry

special locations, such as airport terminals, hotel lobbies, night clubs, motels, hospitals, banks, and other similar locations.

This desk is furnished in a wood-grained top and the side panels come in either a wood grain or Fiberglas. The

Fig. 13. Coin collector desk.

metal used is a fine grade of extruded aluminum. The desk is furnished in various colors with a matching chair.

•

Walk-Up, Drive-Up Booth (Fig. 14). This Esso Products booth is designed

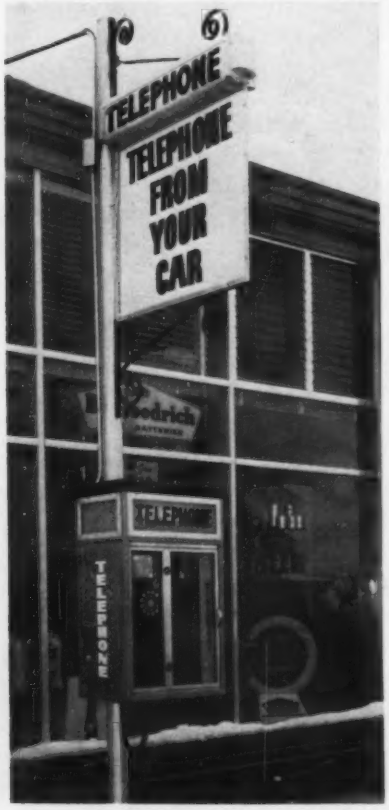


Fig. 14. Walk-up, drive-up booth.

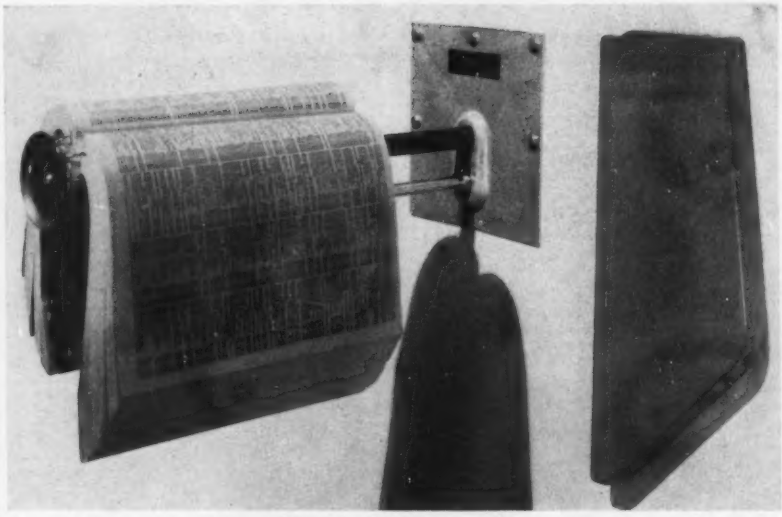


Fig. 16. Directory rack.

for locations where pedestrians, as well as customers in automobiles, have occasion to use a pay-telephone. The telephone instrument and directories are inside and protected from the weather, yet the telephone can be conveniently reached and used either by a pedestrian or a person in an automobile.

•

Custom Decorated Booths (Fig. 15). Butterflies in your booth, or anything else your client or you can dream up! These custom decorated booths, by

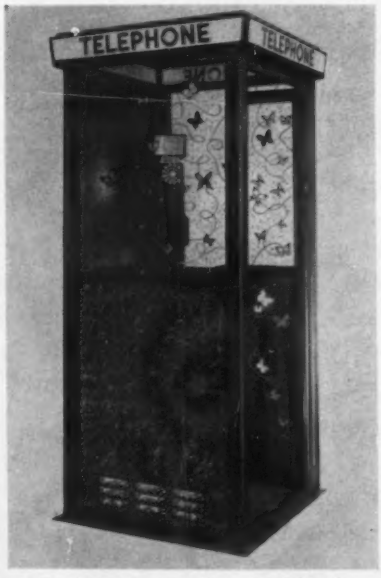


Fig. 15. Custom decorated booth.

Benner-Nawman, provide an opportunity for individuality, originality and coordinated design.

Motifs and decorative pieces can be sealed within the safety glass. Porcelain enameled panels may be textured or smooth. A rainbow range of colors is available—gold, apple green, silver, vermillion—any color or combination of colors. Stripes, abstract patterns, emblems, trademarks also can be incorporated in the design.

•

Directory Rack (Fig. 16). This Benner-Nawman directory rack is designed to eliminate the problem of maintaining directories in public telephone booths. Often, directories in telephone booths are inconvenient to use and are weather-beaten and damaged. This rack is designed to locate the directory so it is unnecessary for the user to lift it or hold it in any position. It is conveniently located under the instrument so that it is easy to read from the directory to the dial, leaving both hands free. It is also de-

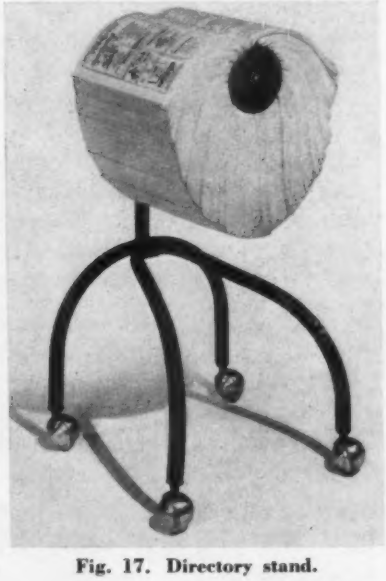


Fig. 17. Directory stand.

signed to provide maximum directory life and eliminates pilfering of the book. This is made possible by mounting smaller directories so they cannot be easily removed without severe damage to the book. Another feature of the rack is that it eliminates costly binders and their maintenance.

•

Directory Stand (Fig. 17). This stand, a product of Benner-Nawman, is a new approach to the problem of maintaining telephone directories in public places. It will accommodate a directory of approximately 10,000 pages. It is easy to read an entire directory page as it doesn't squeeze up the inside columns. The directory remains open at the selected page and is self-balancing. The floor space occupied is only 15 feet by 23 feet. It is of an attractive design with tapering, sturdy tubular legs. A simple, tamper-proof locking device protects directories.

•

Directory Console (Fig. 18). The directory console, also manufactured by Benner-Nawman, is designed for use in transportation depots such as airports and bus depots. It also can be installed in hotels and other multiple

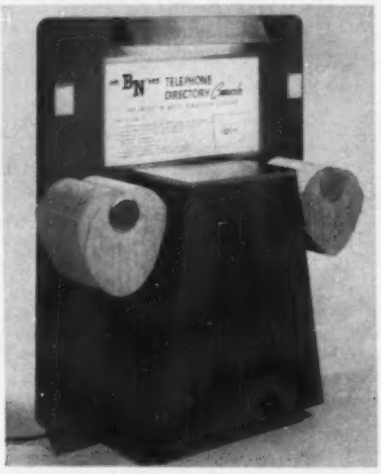


Fig. 18. Directory console.

directory locations. This console has a convenient-to-use writing shelf, two scratch pad dispensers and is well lighted by 20-watt fluorescent lamps. This presentation of numbers speeds booth traffic and reduces information calls. The two racks will accommodate approximately 20,000 pages of directories.

The console may be installed against a wall or as an island (either singly or with two units back to back). It is available in grey or brown in baked wrinkle finish. The light hood and shelf are stainless steel. The over-all floor space required is 13-inches deep by 48 inches by 60 inches.

Short-Haul Cable Carrier System (Fig. 19). The Kellogg K-24 cable carrier system is completely transistorized and designed to provide telephone circuits over relatively short lengths of exchange or toll type cable between central offices, toll switchings and toll connecting trunks. It furnishes 24 channels on two pairs of conductors, with an operating distance of between 5 and 20 miles.

The K-24 meets toll standards, features plug-in (modular) construction. Design is compact and miniaturized, taking up only 31½ inches on a 19-inch rack; 96 channels may be mounted in a single 11-foot bay.

The following features are listed:

Signal Options:
(1) E and M signaling (for toll trunks or two-way exchange trunks).
(2) One-way loop signaling with reverse battery supervision (for step-by-step and most crossbar offices). Loop signaling option eliminates trunk repeater equipment required for conventional E and M signaling systems.
(3) One-way revertive pulsing and supervision (for panel and some crossbar offices).

These signaling options all terminate the voice frequencies on a two-wire basis. They provide access to the network side of the hybrid so that external balancing or building-out networks may be used.

Conversion from one signaling option to another is quickly carried out by simply changing plug-in signaling units. Out-of-band 3.7 and 3.9 kc tones are used to transmit the signaling information on a frequency shift basis from one terminal to the other.

Modulation: The K-24 uses double-sideband suppressed carrier type modulation. Channels for each direction are spaced at 16 kc intervals throughout the extent of the 64-480 kc spectrum used.

West-East transmission frequencies are 8 kc higher than EAST-WEST frequencies. Since each channel occupies less than 8 kc of the spectrum, the channel frequencies interweave, and near end crosstalk is eliminated.

Voice frequencies are translated to carrier line frequencies and retranslated back to voice frequencies by single and group modulation methods. All channels are modulated directly to the high group frequencies at the transmitting terminal. At the receiving terminal, the high group is group modulated to the low group line frequencies before demodulation to voice frequencies.

Circuits: The K-24 provides high-quality circuits without the use of compandors or similar noise or crosstalk reducing devices.

Where crosstalk coupling is too high for good quality circuits, a plug-in sonad sub-assembly (a compandor-like device) is available to reduce interference to acceptable levels.

Repeaters: Repeaters are installed at regular intervals along the cable. They have sufficient gain to overcome a maximum attenuation of 25 db at the highest frequency used (480 kc) in each repeater section.

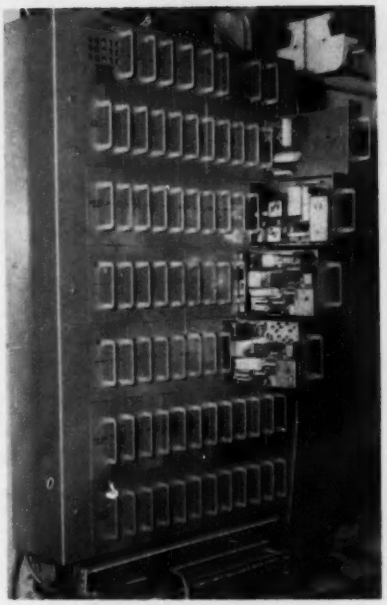


Fig. 19. Short-haul carrier system.

Repeaters are usually located at loading points: Every second load point (12,000-foot intervals) for large gauge cables; every load point for 22 or smaller gauge cables.

Power Consumption: Because K-24 terminals and repeaters are completely transistorized, the average total power consumption for a complete 24-channel terminal is only 100 watts.

Mounting: A complete 24-channel terminal occupies only 31½ inches of rack space on a 19-inch equipment rack. Ninety-six channels can be mounted on one 11-foot, 6-inch bay.

Construction—The components of each unit mount on an etched-wire board which plugs into the terminal shelf. Hence, systems may be expanded readily or altered, after the initial installation.

The shelf is completely wired and tested before shipment. All external connections are made at two terminal blocks on the front of the shelf. No other shelf wiring is required when the system is installed in the office.

Similar construction is used for the repeater: Each consists of two etched-wire boards on which the components are mounted. These boards plug into a watertight housing suitable for installation in a manhole or into a waterproof housing for pole mounting.

•

Subscriber's Carrier System (Fig. 20). This new Kellogg carrier system makes eight voice channels available on a single existing pair of rural ones, eliminating the necessity of installing seven new sets of telephone wires.

By means of selective ringing provided by the system, as many as 10 subscribers can be served simultaneously on each channel. Therefore, as many as 80 subscribers can be given service at one time and any one of the telephones may be rung without ringing any other.

The new carrier system assures expanded use of existing lines and even provides for a few private telephones if subscribers want them. The carrier will operate even when power lines have been knocked out by lightning or severe storms. Small batteries mounted on a pole near the subscriber's home provide power for the carrier until normal service is restored. The batteries are charged continuously from the power lines during normal operations and automatically go into service when power fails.

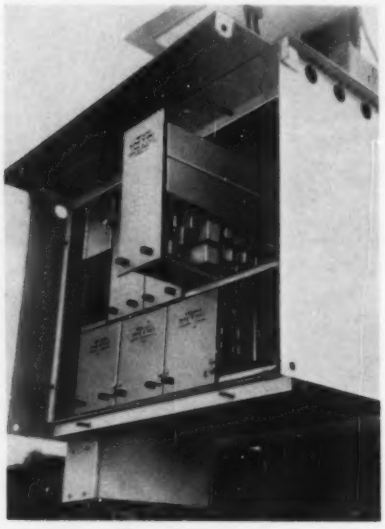


Fig. 20. Subscribers carrier system.

An electronic device known as a compandor is used with the carrier to overcome noise disturbances so often heard on rural telephone lines. The compandor automatically raises the strength of users' voices so they may be heard clearly above any noise disturbances.

•

Page Printer (Fig. 21). This is a completely new instrument. It represents a giant stride forward in record communications equipment. Speed is built-in, with harmonic motions, with lightness and simplicity of parts. It is reported that the Teletype Model 28 Printer actually operates with greater ease at 100 words per minute than conventional machines at slow speeds. It will not, however, lose efficiency at lower speeds and can be adapted for use with older model equipments by a simple change. The printer is small in size, light in weight, and quiet in operation.

Its operation is not affected by tilting or severe vibration, and the sheet metal construction provides exceptional shock resistance. Thus, the printer will operate reliably in mobile applications.

The unique Stunt Box, now available, multiplies the usefulness of the basic telegraph alphabet—providing built-in selective calling and greatly enlarged capacity of printer for features and remove controls. "Building-block" design principle makes it possible to customize the printer to meet individual needs.

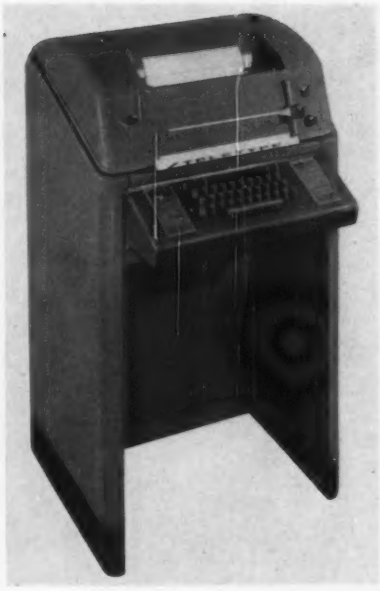


Fig. 21. Page printer.

Speed for speed, this printer will cut customary maintenance to one-fifth, it is claimed. The metal clutches rarely need oiling, loads are lighter—no load when idling. There is less friction and less heat. Special motors were developed for maximum efficiency. The governor holds its speed setting for at least 3,000 hours. Thus, operating costs are lowered, and printers can be installed in locations where frequent servicing is not practical.

•

Automatic Send-Receive Set (Fig. 22). The new Teletype automatic send-receive set operates at 100 WPM, provides facilities for: Typing, tape punching, tape transmission, tape reception, sending and receiving page copy on message paper, or multi-part business forms; tape as a by-product of both transmission and reception; as well as a built-in control system for remote apparatus.

Fig. 22. Automatic send-receive set.

It will function both "off" line locally, or "on" line over communication channels. This unit measures: 39-inches high, 36-inches wide, 18½-inches deep, with keyboard projection of 4¼ inches.

•

Miniaturized Tape Reader Set (Fig. 23). The development of a punched-tape reader set, including transmitter-distributor, motor, base and cover, that is some 40 per cent smaller in size and weight than previous models, has been announced by Teletype Corp.

Called the Model 28 Miniaturized LXD set, the new smaller tape reader measures 5⅞ inches in height, 7½ inches in width and 9½ inches in depth, and features facilities for sequential

(Continued on page 57)

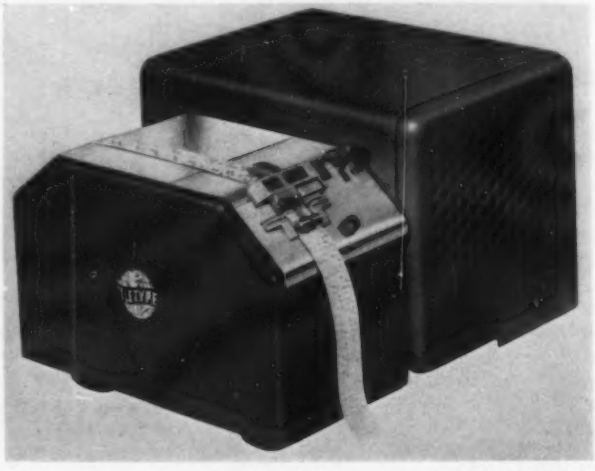
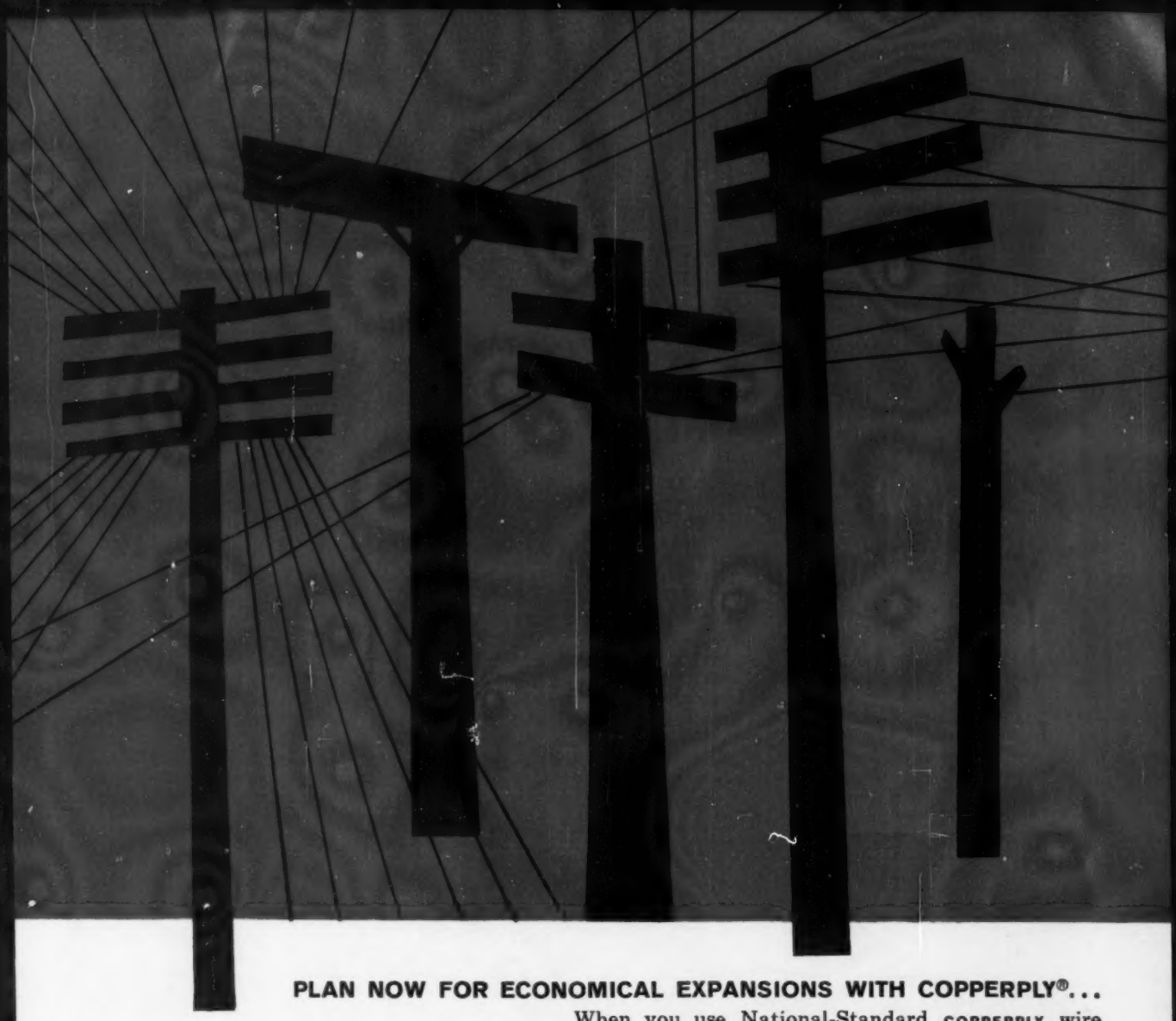


Fig. 23. Miniaturized tape reader set.



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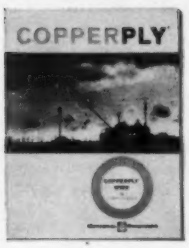

Write for Bulletin 203 that lists full size data, specifications and application photographs.

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DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; tire wire, stainless, music spring and plated wires • **WORCESTER WIRE WORKS** Worcester, Mass.; high and low carbon specialty wires • **WAGNER LITHO MACHINERY,** Secaucus, N. J.; metal decorating equipment • **ATHENIA STEEL,** Clifton, N. J.; flat, high-carbon spring steels • **REYNOLDS WIRE,** Dixon, Ill.; industrial wire cloth • **CROSS PERFORATED METALS,** Carbondale, Pa.; decorative, commercial, and industrial perforated metals.

Challenge to All Americans

Delivered at Wisconsin Convention

By Dan S. Fargo

AMERICANS are oft-times inclined to take for granted our loved ones, our liberties, our luxuries, even our jobs, observed Paul Harvey, American Broadcasting Co. news commentator, before the Wisconsin State Telephone Association's 50th anniversary convention, held in Milwaukee on May 9-11. "Somewhere a twisted lie was conceived that the world owes us a living," Mr. Harvey stated. "That's not what the Bible says, you know. It says, 'As you sow, so shall you reap.' But some, peddling a promise of security in exchange for votes, sought to convince the electorate that we didn't want opportunity anymore, we wanted security. They said, you don't want opportunity; that's 'old hat'—you want security. So, we demanded security.

"We sacrificed quality for equality. We demanded that our employers take care of us, or that government take care of us whether we sow or not. We took our paychecks for granted. No longer was that a reward for honest effort but something the world owed us and should be forced to pay.

"While we looked the other way, the world picked our pocket and we dared not protest. Similarly one after another of our liberties slipped away. We took it for granted that, freedom won for us at Ticonderoga and Valley Forge, would remain forever intact and undiluted.

"Yet today we're regulated in business, regimented as individuals, restricted by laws piled on laws limiting by taxes how much we can make, dictating through social security what in-

(Continued on page 35)

Officers and directors of the Wisconsin State Telephone Association are (standing, left to right): L. J. Robertson of Platteville (president-elect); Phil Bigley of Viroqua; George F. Griffin of Amery (newly elected); G. A. Rutenbeck of Milwaukee (newly elected); Harris G. Allen of Tomah; F. H. Schafer of Clintonville, outgoing president; D. H. Hansen of La Crosse (vice president-elect); J. H. Hesselman of Mondovi; William Rowland of Madison (newly elected); R. G. Peterson of Wittenberg; Allan C. Brown of Rhinelander; Ray J. Riordan, secretary-treasurer. Seated (left to right): Tony M. Gotstein of Casco (newly elected); H. L. Olson of Weyauwega; Gilbert A. Karcher of Burlington, and E. L. Beyl of Osceola.

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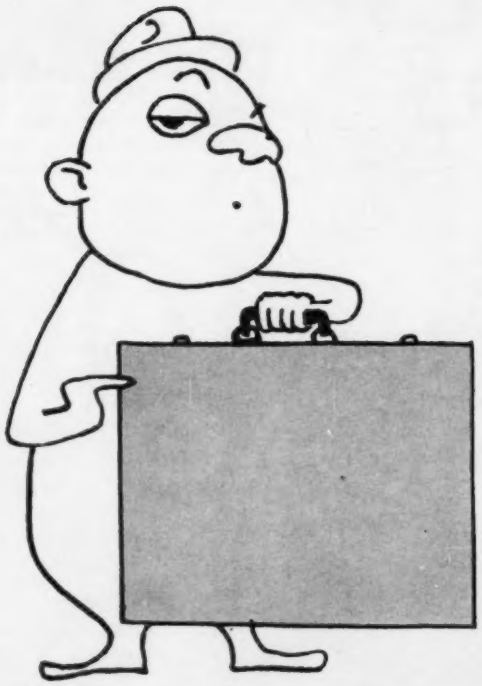
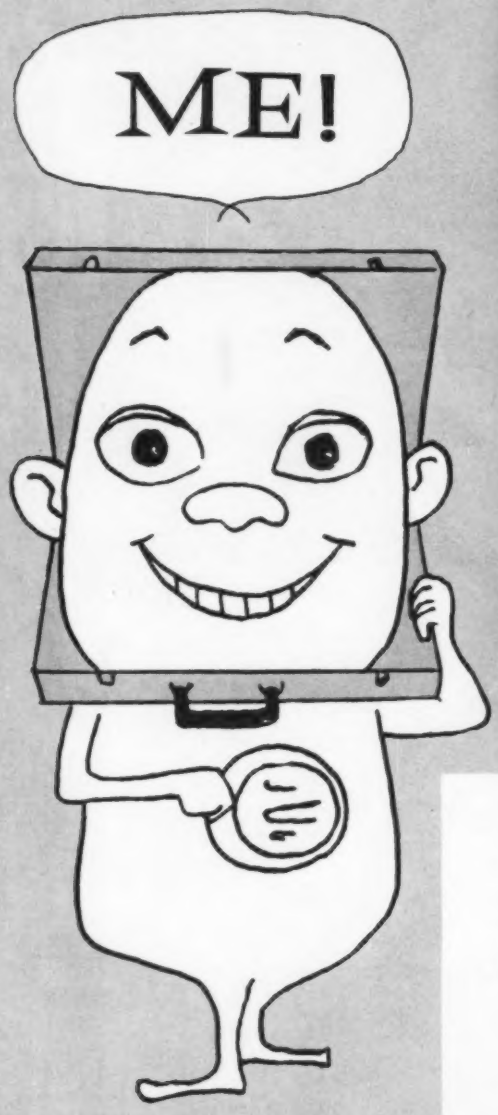


FOR MORE DETAILS, SEE THE NEXT PAGE



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It's true! Most of our Leich warehouse managers do have a pretty high opinion of themselves.

To psychoanalyze them a bit further – Leich's warehouse managers are not super-egotistical at all. They are competent, efficient, specialized, trained men. They have learned the telephone business and understand telephone companies problems, need for service and insistence upon quality tools, materials and supplies. These men are trained to bust a gudget (so to speak) in order to help a good customer get the job done.

We believe you will learn to appreciate every hair on your Leich warehouse manager's egotistical little head, because his egotism is an inherent belief in his ability to do a better job for you... better than you ever dreamed possible.

May we hear from you!

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surance we must buy, prescribing by mandate where big government spends our money, negating the climate in which small business has flourished and thus has made us the powerhouse of this planet.

"Now maybe, as the dictators say, we are not competent to govern ourselves. But I'll tell you something. In the beginning, Americans—under God—did."

Mr. Harvey traced the fortunes of the U. S. from 1789 when our country and its 3 million people were surrounded by an ocean of totalitarianism. The rest of the world watched our experiment in individual liberty and self-government and began to imitate us. Continued Mr. Harvey:

"But now what? Suddenly democracy began to take itself for granted. Democracy, like an uninspired housewife, neglected herself and then was herself neglected — communism, fascism, nazi-ism: these became the world's dynamic political forces.

"We shot two, but we failed to follow through, and since World War II, Communism has captured approximately 100 million new disciples every year.

"Our better product has been left unsold because they have a better sales technique; because, instead of trying to lead other nations as our gallant 3 million forefathers did, we've been trying to push them. Our Declaration of Independence has been supplanted with half a hundred declarations of dependence on others and so, failing to command respect, we try to buy it.

"Times have changed? No, my dear Americans, times haven't changed. We have changed. For all our grandeur and our gold, we win fewer converts to democracy today than our great granddaddies did with nothing but a light in the window."

As for the possibilities of a war with Communist nations, Mr. Harvey remarked that there are those who would bury the atom or hydrogen bombs in a cave in New Mexico or, in concert with other nations, destroy this technological advantage. He pointed out: "Wars never end. Storms are a part of the climate of life. Where is the victory in life if it's all sunshine?

"In the 3½ thousand years of recorded history, fewer than 8 per cent of those years have been without their shooting wars and even in this time in between, the wars-between-the-wars went on—which we've come to call 'cold wars,' waged by the forces of espionage and counter-espionage.

"It's interesting to reflect that history demonstrates who wins this war-between-the-wars generally determines who gets the drop on whom when somebody blows the whistle on a shooting match. And yet, there are some who say we should bury or destroy this weapon when it's the only equalizer that's cut the limitless hordes of Asia down to our size. This is the one deterrent that thus far has kept the big red bear treed.

"Suppose we do destroy it, then somebody blows the whistle on another war; what do we do? Go back to fighting wars with bamboo spears and bayonets again—outnumbered better than two to one? My dear Americans, give your sons better odds than that.

The REA Borrower Conference was reported both interesting and spirited. Panelists included: J. J. Wright, vice president, Crane Engineering Co.; K. J. Jackson, rates and research department, Wisconsin Public Service Commission; E. C. Weitzell, deputy assistant administrator, REA; D. J. Killoren, president, Killoren Co., and E. L. Beyl, president, Osceola Farmers' Mutual Telephone Co. Moderator was Ray J. Riordan, secretary-treasurer of the Wisconsin association.

Wisconsin Public Service Commission chairman Leonard Bessman made his first appearance before a utility convention, since his appointment by Governor Nelson, and recited his views of the commission role in regulation.

"I believe with all my heart that an all-wise Almighty entrusted that hideous weapon to our tiny, little 7 per cent God-fearing fraction of this earth's population—not for our destruction, but for our deliverance."

Now, Mr. Harvey said, with what kind of affirmative faith of our own are we going to counter communism, a godless religion which nevertheless gives its followers a reason to live and a reason to die? What are we for? And equally important to what Americans stand for, is what Americans won't stand for. He answered:

"This needs to be said. The broadcasting business has been lambasted with an avalanche of righteous indignation concerning 'payola.' And there is more to come. . . .

"In By George almost every industry these days, money under the table is standard operating procedure. If I name only a few for-instances, it's only because there isn't space to list them all.

"In the mattress business, some companies slip a spif of 10 to 20 dollars to the store clerk who 'pushes' one product over another.

"In the dairy business, all manner of inducements, including cash, are offered by some companies to store owners to 'stock my brand.'

" 'Push-money' always favors the big fellows who can afford it over the little ones who operate on a close profit margin. . . .

"Or the giant industrial combine that says, 'You sell your dairy or your grocery to me—or I've the weight, influence and finances to force you to.'

"A refinement of the protection racket perfected by Capone. Kick in or get kicked out. Payola!

"Salesmen, buyers, purchasing agents, there are lots of hands out.

"I'm not through.

"What about the ludicrously named 'flower fund' in city hall to which workers kick in every month to some-

body's political coffers at the risk of losing their jobs. It's a kickback, by whatever name. It's payola.

"Newspaper sportswriters on the payroll of big league ball clubs.

"For that matter, every tip you give the barber or the doorman is a bribe intended to buy your way to the head of the line.

"What about the pork barrel politics of 'I'll vote for your bill if you'll vote for mine,' Mr. Congressman? That's a form of payola.

"And so are the promises you make to your constituents: 'You vote for me and I'll get an air base for your county.' (You don't mention, Mr. Congressman, that the money to pay for the air base is coming ultimately from the pocket of that voter. You let him think it's free. Payola!). . . .

"Don't misunderstand. I'm not saying because everybody does it, it's right. I am saying that we are a pretty miserable bunch of hypocrites, when our . . . domestic economy (is) so entirely predicated on the payoff practice, if we seek to divert attention from this big stain by smearing a handful of deejays for 'doing what comes naturally' in this rotten climate.

"It's time for somebody to rub the smug American nose in the whole nasty mess, so if we have any character left, we can all get back to working our way and earning a living, instead of trying to beg, borrow or steal it.

"If Uncle Sam is ever disgraced and destroyed in the eyes of the world, it won't be the Russians who did it.

"It'll be because he was lured astray by a low-necked, short-skirted, rose-scented, diamond-decked hussy named, 'Something for Nothing!'"

Mr. Harvey went on to state: "The more I think about it the more I like this idea of an economic war which Mr. Khrushchev has declared. This is the kind of war every American mother's son can wage knowing why. It could be the best thing that happened to us since we dumped that overtaxed British tea into the Boston harbor.

"If we have left any of that old fire in the belly that characterized our granddaddies, this might be the kind of fight that will get our soft generation off its dead center and back into condition again."

The initial convention activity was an REA Borrower Conference built around a panel, the participants of which were:

E. C. Weitzell, REA deputy assistant administrator, who spoke on REA requirements for supplemental loans.

D. J. Killoren, Killoren Co. president, who presented a contractor's viewpoint.

E. L. Beyl, president, Osceola Farmers Mutual Telephone Co., who presented the experience of an operating man facing expansion.

K. J. Jackson, rates & research department of Wisconsin Public Service Commission, who outlined steps leading up to regulatory sanction.

J. J. Wright, vice president, Crane Engineering Co., who presented an engineer's views.

Ray J. Riordan, Wisconsin State Telephone Association secretary, who moderated.

Wives of telephone men dressed in 1910 costumes to commemorate the golden anniversary theme of the Wisconsin association's 50th annual convention. Pictured here standing, left to right: Mrs. L. J. Robertson of Platteville; Mrs. D. H. Hansen of La Crosse; Mrs. R. G. Peterson of Wittenberg; Mrs. Don L. Schumacher and Mrs. Donald W. Busse, both of Madison. Seated, left to right: Mrs. F. H. Schafer of Clintonville; Mrs. Ray J. Riordan of Madison, and Mrs. Harris G. Allen of Tomah. Mmes. Schumacher, Peterson, Allen and Schafer constituted the committee in charge of women's activities for the convention.

F. H. Schafer of Clintonville, association president, presided at the rest of the meetings. In his address, Mr. Schafer underscored the value of united effort as exemplified in state associations—one trip to a state capital, he said, would cost the dues of several member companies. Keeping abreast of rules, or setting up a uniform tariff with regulations (the latter a six-month job), are other illustrations of tasks best done by associations.

Mr. Schafer recommended that the association keep a fund equal to a year's operating expenses in its surplus to be ready to meet any industry emergency, such as a long court case or industry recession.

In the area of company operation, Mr. Schafer said he believes the return on a telephone company's rate base, should exceed the cost of borrowed money by at least 2½ per cent. He also said, "Even though we're the only telephone company in town, there is, of course, plenty of competition." He went on to point out that if companies sell more and more services, this should lessen the number of times a company has to appear before the commission to request increased rates.

Leonard Bessman, chairman of Wisconsin Public Service Commission, after expanding on his subject, "Why Regulation," pointed out Justice Brandeis long ago held that investors who place their money in utility stocks may not expect grand returns—it's not in the nature of the utility business; if extensive returns are sought, the money should be invested elsewhere.

Mr. Bessman also stated that the standards of conduct expected of commissioners require that, though they'd enjoy more conviviality and association with members of the industries they regulate, they must inhibit these desires in order not to diminish public confidence.

Of course, Mr. Bessman added, this stand should not discourage managements from making telephone company problems known to the commissioners and the staff.

Foster B. McHenry of Jefferson City, Mo., president of the United States Independent Telephone Association, acknowledged for USITA the cooperation extended the national organization by the state associations. In his "The Golden Decade Is Here," Mr. McHenry said he believes the present high regard nationally for USITA is heavily due to the association's national advertising, concentrated, for the current year, in the *Saturday Evening Post.*

The Independent telephone industry's investment in plant now exceeds 3½ billion dollars and employes number

(Continued on page 59)

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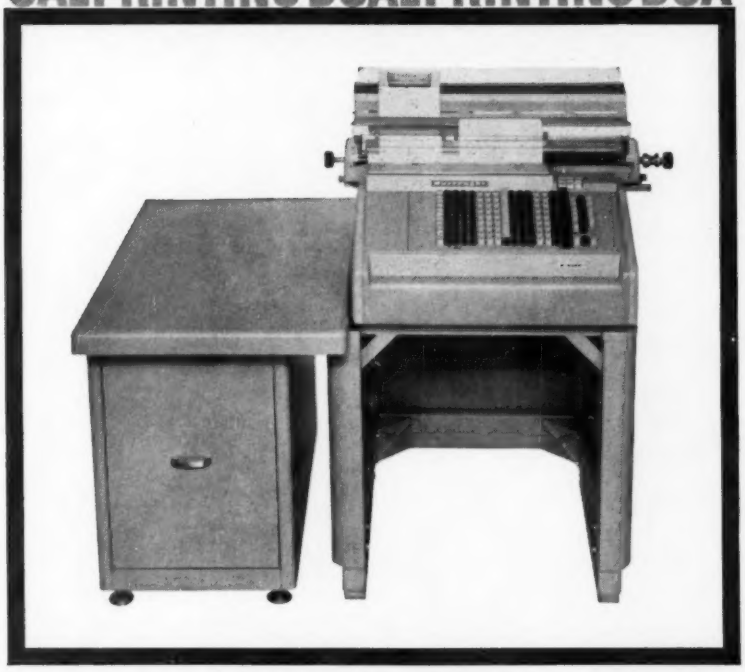

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THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

THE SPLICING of conductors in plastic-insulated cable has been a problem since the introduction of this type of cable to the telephone industry.

The silicone-greased filled sleeve proved to be a good insulator, but the removing of the plastic insulation from the conductors always proved a difficult and time-consuming task.

With a view to overcoming this problem in 1953, E. E. Leach, supervisor of electro-mechanical product development for Minnesota Mining & Mfg. Co., began research and development work in the plastic telephone cable splicing field to design a method of protecting splices in small plastic-insulated conductors.

First design efforts followed two lines of approach. The first, the mass protection method, was aimed at isolation of a splice by blocking the cable and encasing the splice in a watertight enclosure, or by solid impregnation of the splice with a fast-reacting liquid epoxy resin. The other approach, to develop an individual connection method, was aimed at sealing each individual joint, combining connection and protection in one mechanical unit.

In 1956, after three years of development work along both methods of approach, full effort was devoted to development of the individual connection method, reserving the known techniques of mass protection for special applications.

Due to requirements inherent in a truly universal connector, several goals were established at the beginning of this phase of the project. These goals included:

(1) Reliability and permanence, functionally the equivalent of a twist-and-solder connection.
(2) A water-impervious seal to all conductors in a telephone cable.
(3) Minimum labor cost and maximum conductor safety, with no stripping of wire insulation required.
(4) Compact size and unobtrusive shape.
(5) Over-all saving over existing methods.

Secondary, but important specifications were also established:

(1) A single operation required to connect and seal, using only a simple tool, if one should be required.

(2) Sufficiently wide range in one size unit to accommodate all numbers of conductors and combinations of wire gauge normally encountered.

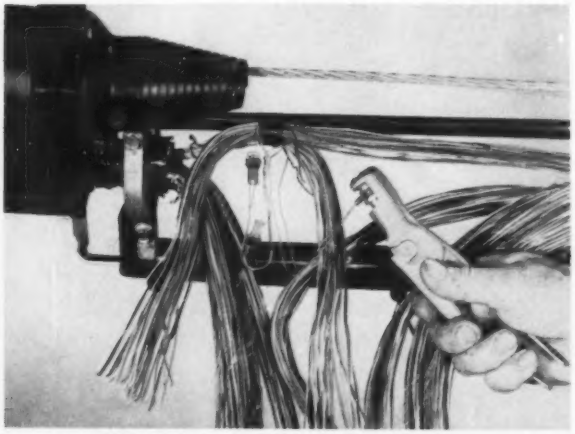
(3) Equal efficiency as a connector for plastic or paper-insulated conductor.

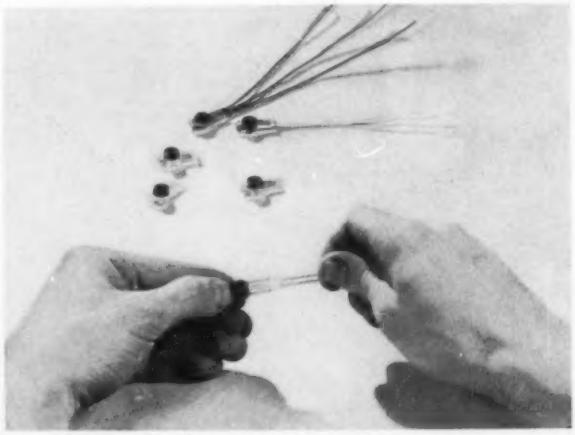
(4) Adaptable to aluminum or other conductors, or to plastic insulation other than polyethylene.

The development efforts were divided into two classifications—connecting and sealing—each considered equally important to the problem of splicing plastic-insulated telephone cable. Since the no-stripping feature was considered a basic requirement for the connector, investigations were made of insulation removal methods associated with the method selected for completing the electrical connection. Five possible methods of displacing the insulation were available, all requiring that pressure be exerted on the conductor.

These methods include: Flowing the thermoplastic insulation from the con-

(Continued on page 61)

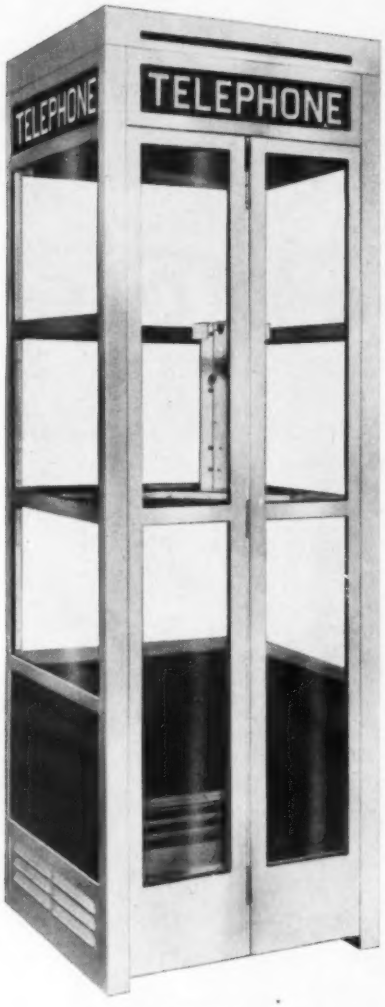




LEFT PHOTO: With both ends of first binder group of coded wires taped to back side of the support rod, the splicer begins matching and splicing. First step is to cut wires to length; next, insert wires into barrel of the "Scotchlok" UR connector, then squeeze button into connector, completing the splice. No stripping of wires is necessary, saving what has been found to be 30 to 50 per cent of a splicer's time. RIGHT PHOTO: Wires have been cut to length and inserted in the "Scotchlok" UR connector. Transparent sleeve permits visual check of wire insertion and completed splice.

NEW...Low Cost Reynolds Aluminum Phone Booths

for Indoor Installations



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Only 28¾" x 28¾" x 87" over-all dimensions!
Door opening a large 24½" x 76".

Now you can build added revenue with indoor installations of Reynolds new, lightweight telephone booths, and at a lower cost than conventional outdoor booths. The new booth only weighs approximately 350 lbs., comes fully assembled, is easy to locate and may be set up singly or in tandem. It's ideal for location in hotels, supermarkets, airports and department stores.

Made of strong, lightweight and weather-resistant aluminum, the new booths take outdoor abuse as well as indoor use in stride. Aluminum members never need painting for protection, they do not rust, warp, crack, chip or peel—are corrosion and mar-resistant—and almost vandal proof.

The Reynolds Aluminum booths are made of aluminum extrusions, clear anodized, and any combination of clear safety glass panels and ceramic fired colored panels. The doors are self closing, each section holding two clear safety glass panels. A safety aluminum tread floor is included for use in indoor installations. Optional ventilator panels are available.

Let Reynolds show you how profitable a pay station can be with low-cost, easy to install aluminum telephone booths. For the name of your nearest distributor contact the local Reynolds Sales Office, or write *Reynolds Metals Company, Box 2346-EG, Richmond 18, Virginia.* Write for Free Brochure!

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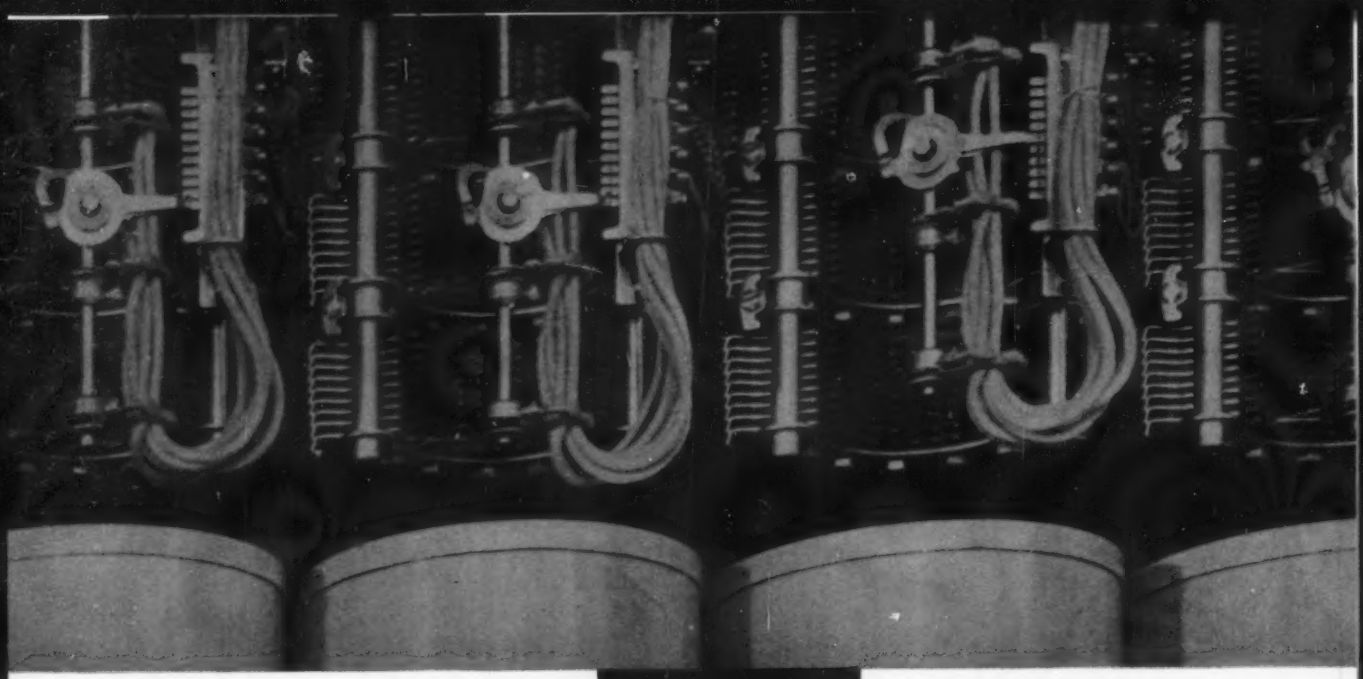
Watch Reynolds TV Shows: "Bourbon Street Beat" and "Adventures in Paradise"; and, resuming in October, "All Star Golf"—ABC-TV



Quality construction is an important factor to the man who selects dial switching equipment. That's why so many telephone men have toured our factory at Northlake, Illinois, to see the entire manufacturing process of Strowger equipment. They've seen how raw materials are carefully inspected for quality. They've observed the close tolerances to which each Strowger part is manufactured to insure ease of adjustment. They've watched the accurate control that is applied in the finishing of Strowger parts to provide good fit and lifetime protection. And, they've noted the constant inspection of these parts during every stage of production. No wonder so many telephone men choose Strowger!

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another reason why telephone men choose Strowger!

FIND OUT FOR YOURSELF! The next time you're in the Chicago area, come and visit us. We'll be glad to show you through our entire Northlake plant. You'll see the unsurpassed quality and craftsmanship in the construction of Strowger. To make arrangements for your tour, write Automatic Electric Sales Corporation, Northlake, Illinois.

AUTOMATIC ELECTRIC GENERAL SYSTEM

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Courts and Commissions

Minnesota Company Gets 1st General Raise in 40 Years

The KMP Telephone Co., Kerkhoven, on May 27 was granted a rate increase by the Minnesota Railroad & Warehouse Commission, its first general rate revision since 1920.

The company provides dial service to approximately 581 company-owned stations and 764 service stations through exchanges at Kerkhoven, Murdock, Pennock and Sunburg. Through an extended area service plan, any station in any exchange may call any other station in any exchange.

The commission said in its report:

"Through frugal and judicious management (the KMP company) has managed to furnish a satisfactory telephone service to its subscribers at a very low cost; however, with the adding of new plant each year, and the increased cost of equipment and labor, (the company) finds it impossible to continue the present schedule of rates and (has) asked for an upward revision in order to assure that the subscribers may continue to be served and the company remain solvent."

Under the new rates, the company's net operating revenues will increase from $35,490 to $50,651. This will give the company a net income of $8,506 and provide it with a 5.89 per cent rate of return on its current value rate base of $144,411. Under its old rates, the company had a loss of $850.

Present rates are as follows:

	*Kerkhoven**	*Murdock & Pennock***	*Sunburg*[1]
One-party business	$2.50	$2.75	$3.00
Two-party business	2.00	2.50	2.50
One-party residence	1.50	1.75	2.00
Two-party residence	1.25	1.50	1.75
Four-party residence	1.00	1.00	1.50
Multi-party residence	—	1.00	—
Multi-party rural residence	—	1.25	—

*All rates at Kerkhoven are net.

**Rates for Murdock and Pennock are gross, and there is an additional charge for a handset instrument. Multi-party business service (at $1.75) is offered only for Murdock as is multi-party residence and rural multi-party residence service. Four-party residence service at Pennock is billed at $1.25.

[1]Sunburg rates are gross.

New net rates for all exchanges, effective June 30, are as follows:

One-party business	$5.25
Two-party business	4.00
One-party residence	3.25
Two-party residence	2.60
Four-party residence	2.10

Neb. Company Asks Permit For Mobile Service, Rates

The Lincoln Telephone & Telegraph Co. on May 19 filed an application with the Nebraska Railway Commission for permission to provide mobile telephone service at Hastings and York. The company has furnished mobile service at Lincoln since 1947.

The application also asked for revisions in the tariff designed to "simplify the application of charges and provide for the subsequent addition of mobile service areas, as each appears to be economically feasible, until a company-wide mobile service system can be established."

The Lincoln company also asked to eliminate mobile signaling service, inasmuch as no requests had been received for it.

For general service, the minimum monthly service charge per mobile unit is $7.00, including one directory listing and 120 general service message units.

For dispatching service, the minimum monthly service charge per mobile unit is $7.00 for the first unit, and $2.50 for each additional unit. This includes one directory listing and 120 dispatching service message units for the first mobile unit and 30 for the second mobile unit.

The rate for each dispatching terminal is $6.00 per month, when located at the principal exchange; and $12 per month, when located at another exchange within the same mobile service area.

At the option of the customer, the radio equipment on the mobile unit will be provided, installed and maintained by the company for an installation charge of $25; a monthly charge of $15 for single-channel sets; $16 for two-channel sets; and $17 for three-channel sets.

SW Bell to Appeal from Raise Ordered in Kansas

The Kansas Corporation Commission on May 27 announced it will grant Southwestern Bell Telephone Co. a $1,321,000 general rate increase—less than one-fourth the amount sought by the company (TELEPHONY, June 13, 1959).

Southwestern Bell had requested a $5,800,000 rate increase. The company said inflated costs had pushed its earnings down to 5.7 per cent on net investment in 1958.

The commission rejected the company's request to adopt a fair value rate base and, instead, used original cost less depreciation of plant in service.

Commission Chairman Harry G. Wiles said the increase granted the company equals a 6.59 per cent return on this type rate base.

This ruling was termed "completely unrealistic," one that "fails to recognize the facts of business life" by J. Hardin Smith, vice president and general manager for Southwestern Bell in Kansas.

"With this ruling we can't provide the people of Kansas with the type of telephone service they want and need," Mr. Smith said. "We have no alternative but an appeal to the courts for an adequate rate of return on our telephone property in Kansas.

"Actually, the company cannot earn the 6.59 per cent supposedly allowed because the commission ignored or disallowed several legitimate business expenses," Mr. Smith commented. "Bills must be paid with money, not disallowances."

Under this ruling, the commission said, Southwestern Bell will realize approximately $914,000 additional revenue from increased rates. The remaining

(Continued on page 48)

DEKALB TELEPHONE COOPERATIVE* CUT BILLING TIME 80%

YOU CAN, TOO!

The successful growth of Dekalb with its rapidly expanding subscriber list, created a billing headache. Help from the Remington Rand Business Service Department "cured" the headache by recommending a KOLECT-A-MATIC® visible accounts receivable system.

With a KOLECT-A-MATIC system, everything related to a given account is filed in one pocket—a single place in which a summarized credit history and full information on current charges are kept. Every account is visibly indexed for fast billing and swift, at-a-glance reference. Colored signals flash payment dates and graphically indicate oldest accounts. Monthly statements are quickly and easily prepared by clerk by simply referring to customer pockets containing all current charges and billing data.

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*Dekalb Telephone Cooperative, Alexandria, Tennessee.

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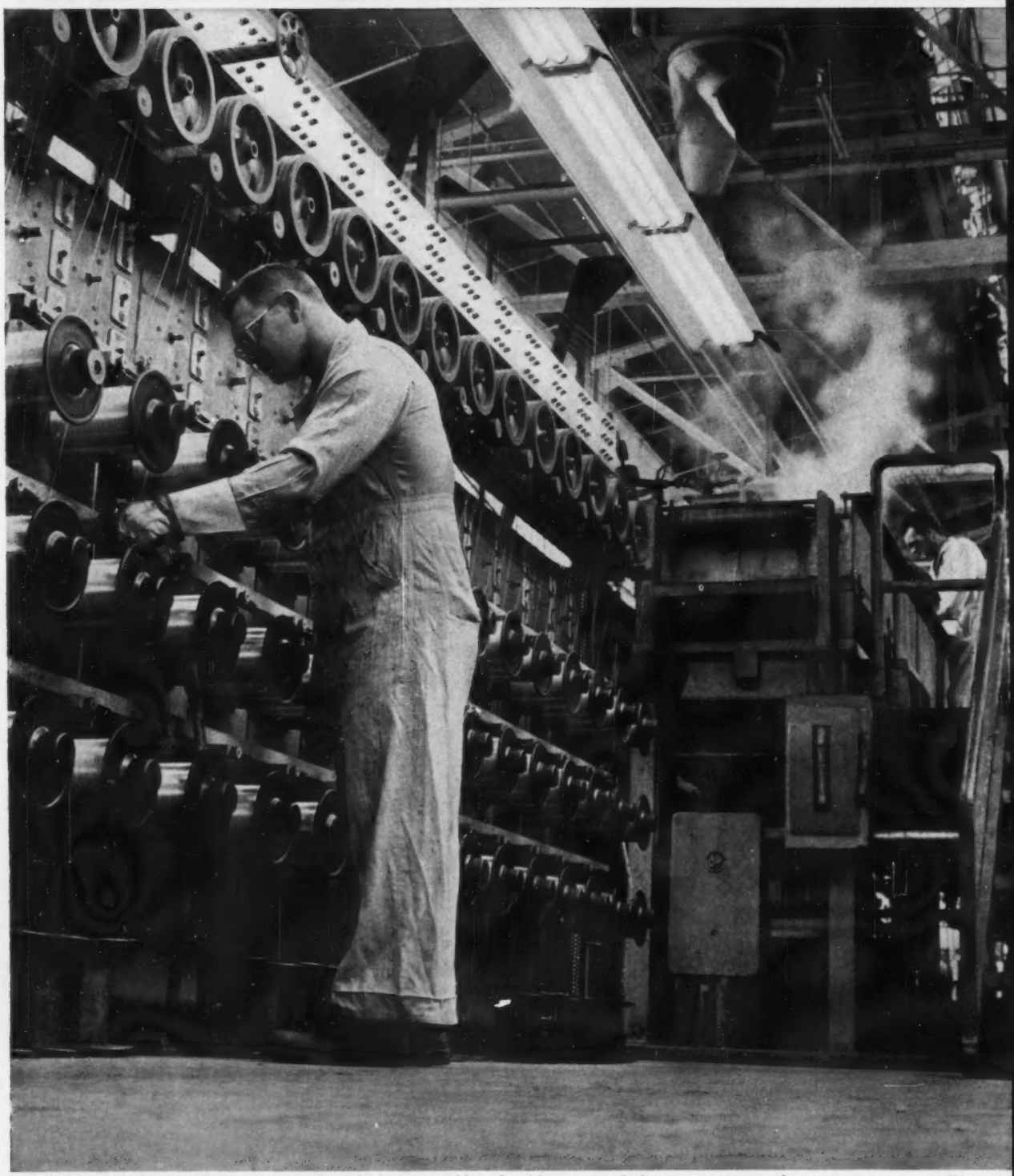

ELECTRO-TINNING of copper wire for telephone switchboard cable is one of the important manufacturing processes at Western Electric's Tonawanda Plant. Peter Opolka (left) and Norman Brown oversee the machine as a micro-thin tin coating is electrolytically deposited on copper wire as it passes through a plating bath. This thin deposit of tin makes the wire easier to solder during installation.

BUFFALO, N.Y.

The nation's third largest railroad gateway . . . New York State's second largest city . . . and for fourteen years, home of Western Electric's Tonawanda Plant. In Buffalo we make Bell telephone wire and cable . . . and contribute to the prosperity of the city and its citizens.

Situated in the midst of one of our nation's great industrial areas – six miles from the heart of bustling Buffalo –Western Electric's Tonawanda Plant bristles with activity as it goes about its main job of making telephone switchboard cable, telephone cords and fine-gauge insulated wire for the Bell Telephone System.

Western Electric employs the skills and talents of some 1900 local men and women to help carry out this assignment. In addition, we purchase large amounts of the equipment and materials we need from 446 firms right in the Buffalo area (and from 5634 suppliers throughout New York State).

How else has Buffalo benefited? The gains pop up all over town – in wages and salaries spent with hometown stores, jobs created, taxes paid to local government. Plus participation by W.E. people in civic and social affairs. It all adds up to our share in building a better Buffalo.

TUITION REFUND PLAN, sponsored by W.E., helps Engineering Associate Donald R. Manweiler towards a B.S. degree in electrical engineering at University of Buffalo night school. Many Tonawanda employees attend college under this program.

Besides Buffalo, Western Electric has 12 other principal manufacturing locations, where we also make hundreds of different products for the Bell System and for the government, mainly for national defense. Last year we purchased over a billion dollars' worth of raw materials, products and services from our more than 35,000 suppliers located in every state of the Union. Of these, 90% are "small businesses." The things we make and buy are distributed to the Bell telephone companies through Western Electric distribution centers in 32 cities.

LOCAL SUPPLIER Stanley M. Knapp, Jr. (left), Vice President of Trimold, Inc., discusses a new plastic cable boot with Donald A. Miller, a member of the W.E. buying staff. This product saves time and money in connecting Call Director telephone sets.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

LOOKING IN on New York's historic Old Fort Niagara are Clarence W. Weis, his wife, Raili, and their children, Michael and Lisa. Mr. Weis, a machinist, has worked at Western Electric's Tonawanda Plant for 13 years.

RED CROSS WORKER, W.E.'s Lottie McCallum, assists disabled veterans in her part-time, voluntary job of driving Red Cross cars. She has been devoting most of her spare time to this for 15 years.

$407,000 is to be gained by passing on to customers the franchise taxes levied against the company in some cities.

Mr. Smith said the commission's decision actually discriminates against Southwestern Bell.

"In other important utility orders decided by this same commission, the rate of return has been set in the range of 7 to 7.25 per cent," he said. "And in these same orders, inflation has been recognized as having a definite effect on the operations of the various companies. I don't see how they think Southwestern Bell is immune to inflation.

"In the year that this case has been pending, nothing has changed in the economic pattern of the nation to make our money requirements less than forecast by company witnesses," Mr. Smith continued. "The demand for better service continues and we're still confronted with inflation, higher costs and higher taxes.

"Our last general rate increase in Kansas was eight years ago," he said. "While the prices of most other things have gone up, we kept telephone rates down by rigid expense controls and finding more efficient ways to do our jobs.

"Apparently, Southwestern Bell is singled out for worse treatment than other Kansas utilities right at a time when customer demand for service improvement is at a peak," Mr. Smith added.

He said the original company application for $5,800,000 was conservative. Increased revenues of this amount are necessary to enable the company to raise the needed capital to continue its construction program, the Bell vice president pointed out. He said the company now may have to curtail its current construction program in the state which calls for expenditures of 32 million dollars this year.

New rates under the ruling are to be put into effect on July 1, 1960, the commission said.

The commission is expected to issue the formal order within a few days.

Southwestern Bell filed its rate increase application with the Kansas Corporation Commission on May 28, 1959—just a day short of a year before the commission decision was announced.

Oregon Independent Sold To United Subsidiary

Sale of the Northwest Telephone Co., Redmond, to the Oregon-Washington Telephone Co., Hood River, was approved on May 31 by the Oregon Public Utility Commissioner.

Northwest has been furnishing service to approximately 4,761 subscribers. The Oregon-Washington company is a subsidiary of United Utilities, Inc.

Commissioner Jonel C. Hill, in his order, stated:

"Oregon-Washington, through the acquisition of Northwest, will effect economies in over-all operation, in the purchase of materials and supplies in greater quantities, in salaries of executive personnel, and wider coverage in its service to the public. Estimated annual savings of $26,680 in management and operating costs will result from the transaction.

"In addition, through its affiliation with United, Oregon-Washington is in a position to obtain all required financing at minimum mortgage rates."

Set Hearing on New York Company's Rate Application

The New York Public Service Commission has set a June 17 hearing date on the application of the Darien Telephone Co., Corfu, to raise its rates by about $13,626 annually. Darien claims this amount is needed to offset higher operating costs.

The company provides magneto service to approximately 1,150 stations through exchanges at Darien and Corfu.

Approve Rates Decreasing General of Illinois Income

The Illinois Commerce Commission on May 17 approved rates filed by General Telephone Co. of Illinois which will decrease General's revenue by $400,000 annually (TELEPHONY, Feb. 27).

In September 1958, the company filed for an increase in rates of 3.6 million dollars and in July 1959, after extensive hearings before the Illinois Commerce Commission, an order was issued granting the company increases totaling 3.2 million dollars.

The company and intervenors in the case filed for a rehearing in the matter, which was denied by the commission. Subsequently, the commission order was appealed by both parties to the Circuit Court of McLean County.

Following this court appeal, the Supreme Court of Illinois rendered a decision in the Alton Water Co. case which provided, among other things, that the rate base should be reduced by the amount of cash working capital provided by customers in the form of accrued taxes and advance billings.

As a result of this case, attorneys for the company and the intervenors

TELEPHONY to Publish Signal Corps Issue — Order Your Copies Now

On June 21, the U. S. Army Signal Corps will celebrate its 100th anniversary—a century of service to the Army and the nation.

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TELEPHONY will devote the entire editorial space in a special issue, dated June 18, to observe the Signal Corps' 100 years of progress in the science of Army communications—an advance from colored signaling flags to a communications satellite relaying voice and teletype messages from outer space.

Interest being shown in this special Signal Corps issue at this early date indicates there will be a great demand for copies on the part of members of the Armed Forces, and telephone operating and manufacturing personnel.

To insure the printing of a sufficient number of copies of the special issue to meet the demand, we urge those desiring copies to fill in and send to us the order blank below:

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entered into a stipulation for the reduction of General's rates reflecting this treatment of working capital.

The new rate schedules provide reductions in rates for residence service of 10 cents to 15 cents.

Decatur, Texas, Company Granted Rate Increase

The Central Telephone Co., Decatur, Tex., received approval it was reported on May 22, of a rate increase at its Alvord, Decatur, Slidell, Sunset, Boyd, and Krum exchanges. The new rates were to be effective within 10 days after June 1.

Under the new authorization, the company was to increase rates for its rural subscribers only on the Boyd and Krum exchanges.

At Alvord, Decatur, Slidell and Sunset, the minimum rates were to be raised from $3.00 to $4.00. Boyd rural subscribers received an increase from $3.50 to $4.00; and the Krum rural subscriber's rate was to increase from $3.60 to $4.00.

Rates at the Sanger exchange were not affected, since an increase went into effect at dial cut-over on May 1.

Bryan Goodger, manager of the Central Telephone Co. Decatur headquarters, said "Central is one of the few companies in Texas that now has a $3.00 rural rate and is the only company having this rate with extended area service.

"The old rates were established in 1954, and since that time labor and material costs have risen steadily each year, making this increase necessary. After this increase is effective, rural subscribers will still be receiving telephone service at a much lower rate than the average rural telephone subscriber in this area or in the state."

Mr. Goodger said the average rate for dial rural service in Texas is "well above $4.00 and in most cases doesn't include extended area service, which is supplied to all rural customers in Denton, Montague and Wise Counties."

The company is now in the process of installing $350,000 worth of new equipment in Sunset, Chico, Sanger, Krum and Slidell. The Decatur office equipment, still being installed, represents an additional $150,000 investment.

Wis. Rate Hearing Set

The Wisconsin Public Service Commission on June 9 was to hear the application of the Ogema Telephone Co. for a rate increase.

Charter Kansas Company

The M & W Telephone Co. Inc., Whiting, Kan., has been granted a charter, with Van Holtby named as

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resident agent. Capitalization of $50,000 has been authorized.

Southern Bell T&T Returning $2 Million in Mississippi

The Mississippi Public Service Commission on May 27 ordered the Southern Bell Telephone & Telegraph Co. to refund 2 million dollars to state subscribers and bring intrastate rates in line with interstate charges (TELEPHONY, Feb. 27).

Clarence Lott, general manager of Southern Bell for Mississippi, said the company would not appeal the commission's ruling.

The commission order came as a result of hearings held in March and April, at which time the company was instructed to show why intrastate rates charged in Mississippi were higher than rates on interstate telephone calls.

Southern Bell was required to refund 9 million dollars late last year when a proposed rate increase was denied by the commission, and the refund ordered in May brought total refunds to 11 million dollars, the company stated.

The commission said the additional 2 million dollars will be refunded to about 35,000 customers as result of the order to Bell to extend base rate areas.

The company last winter refunded the 9 million dollars after losing a three-year fight through the commission and the Mississippi courts.

The company had increased its rates under bond and the refund was the return of the increase to subscribers.

In the rate increase of three years ago, Southern Bell revised its rate structures so that some subscribers received lower rates.

The company attempted to back-bill these customers for the difference of the former rates in the rates of the three-year period. The latest commission ruling ordered Southern Bell to refrain from back-billing any of these customers.

Other provisions of the order required the company to speed up its program of modernization and expansion of its Mississippi system.

In order to offset the loss of revenue to Southern Bell, the commission authorized the company to increase its charges for basic business service in amounts which will not exceed 90 cents per month.

The commission emphasized there will be no increase in cost of service to residential customers.

During the hearing, the company offered an explanation of why its intrastate rates were higher than interstate rates, but the commission said it was not satisfied with the explanation, and called for a downward adjustment.

The commission ordered Southern Bell to refrain from back-billing, cutting off and otherwise charging customers for any difference between the rates charged under bond and the rates legally in effect when the increase went into effect in July, 1956. Its order became effective on June 1.

REA OK's Loans Totaling $1,915,000

The Rural Electrification Administration has approved four telephone loans as follows:

Gardonville Cooperative Telephone Association, Brandon, Minn.; $117,000; May 23.

Loan funds will help to furnish initial service to 64 subscribers, mainly in the Garfield exchange. On completion of construction planned under this and prior REA loans, the borrower will be serving 1,164 subscribers. All five dial exchanges are now in operation serving approximately 1,000 subscribers.

•

The Fillmore (N. Y.) Telephone Co.; $1,551,000; May 24.

This loan will aid in improving service for 2,506 subscribers and in furnishing initial service to 737 subscribers. About 886 of the existing subscribers receive dial and magneto service from the Fillmore company, a new REA borrower, and 1,415 of them are served by four companies which the borrower plans to acquire and integrate. The remaining 205 own their lines near Greenwood. They plan to abandon their facilities and become regular subscribers of the borrower as soon as service is available.

The four companies which the borrower plans to acquire are: West Valley Telephone Co., Jasper-Steuben Telephone Corp., Hammondsport Telephone Co. and the Pulteney-Branchport Telephone Co. New dial offices will be constructed at Jasper, Greenwood and Hammondsport to replace existing facilities at these locations. The Fillmore and West Valley central offices will be remodeled and the existing dial facilities expanded.

William B. Harrison is president of the Fillmore company.

•

Hardin County Telephone Co., Rosiclare, Ill.; $65,000; May 27.

These funds will assist the borrower in completing its previously authorized system. The two REA loans to this borrower will make possible new and improved service for 2,022 subscribers. The system, when complete, will consist of five dial exchanges.

•

Mark Twain Rural Telephone Co., Bethel, Mo.; $182,000; May 27.

Funds will help to improve service for 118 subscribers and to furnish initial service to 148 subscribers. Seventy-eight of the existing subscribers now receive magneto service from the Durham-Maywood Telephone Co., which the borrower proposes to acquire. The remaining 40 who will receive improved service now own their own lines in the Durham vicinity. They plan to abandon their lines and become regular subscribers of the borrower.

New dial central offices will be constructed at Durham and Steffenville. The two REA loans to this borrower will enable it to furnish new and improved service to 2,470 subscribers. When complete, the system will consist of 10 exchanges. Eight of them now furnish dial service to more than 2,000 of the subscribers.

Obituary

PAUL V. DIMMICK, 54, district manager of The Holan Corp., Cleveland, O., died on May 25, in Jamestown, N. Y.

Mr. Dimmick had been with Holan for 10 years.

He lived in Lakewood, O., and is survived by his wife, Margaret, and two sons.

Elect Henderson to Lead Neb. Independent Pioneers

Gay T. Henderson of Lincoln, Neb., was recently elected president of the Frank H. Woods chapter of the Independent Telephone Pioneer Association in that state. He succeeds Miss Clara M. Jones of Lincoln.

The announcement was made June 11 at the chapter's annual banquet and reunion at the Cornhusker Hotel. The meeting also featured a hobby show.

G. T. HENDERSON

Others elected were Richard B. Hobson, vice president; Grace Hauschild, secretary; and Georgia Smith, treasurer. Lola Hetherington and B. D. Pattison were named as members of the executive committee. All are of Lincoln.

In her annual report, President Jones announced a record membership of 623, including 30 auxiliary members.

Fla. Woman Pioneer Retires After 52 Years Service

Frances Birdo Riley of the General Telephone Co. of Florida has retired after 52 continuous years of service, one of the longest service records for women in the telephone industry.

Miss Riley began work with the telephone company in 1908 as a local operator and was serving as traffic employment supervisor at the time of her retirement early in May.

F. BIRDO RILEY

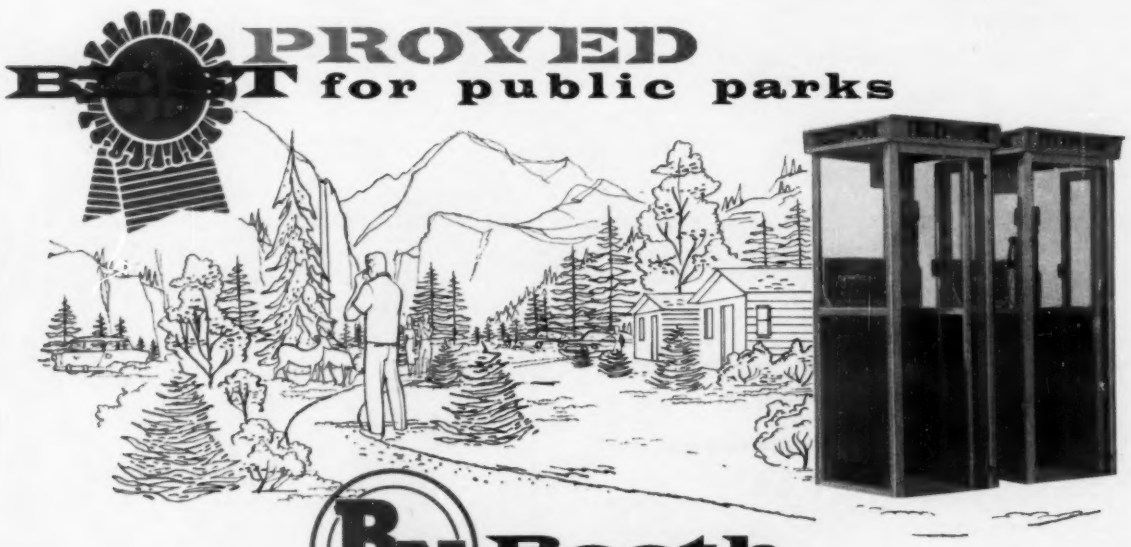
The Tampa pioneer telephone operator was president of the W. G. Brorein Council-David Laird chapter of the Telephone Pioneers of America in 1958. She was also the "first lady" of the Quarter-Century Club of the company.

Florida General presented Miss Riley with a 50-year service pin, the first of its kind given to a General of Florida female employe, in 1958, and she was honored earlier with a banquet given by 30 women employes and retirees of the company who had had 25 or more years of service. Many of those present had been trained by Miss Riley.

Miss Riley was the first operator on the West Coast of Florida to be trained in standard toll (long distance) practices.

ATT's Thayer Honored

Gordon N. Thayer, vice president-operations of the American Telephone & Telegraph Co., was awarded an honorary Doctor of Engineering degree at the June 11 commencement exercises of Stevens Institute of Technology, Hoboken, N. J., President Jess H. Davis announces.



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Lenkurt equipment lets you *add as you grow*, the "building-block" way, with the full assurance that what you install today won't be outdated tomorrow.

In addition, AE will serve as your headquarters for all telephone supplies—from cable and exchange equipment to fully integrated communication "packages."

For full details on progressive planning of *your* expansion program, call your Automatic Electric representative, or mail coupon today.

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provides direct interconnection at carrier frequencies

Lenkurt 45-Class Carrier offers the most logical approach to profitable circuit expansion. Used with any combination of open wire, cable and microwave, Type 45 equipment provides *direct interconnection at carrier frequencies*—permits the complete coordination of your entire carrier network.

Five interconnectible 45-type systems are available to meet any transmission situation: 45A (12 channel, open wire); 45BN (24 channel, cable); 45BX (24 to 264 channel, radio); 45C (16 channel, open-wire pair); 45CX (4 channel, narrow-band radio).

All 45-Class units feature miniaturization and the extensive use of plug-in components for easy maintenance. Circuit advancements such as automatic channel level regulation and crystal-controlled carrier frequency supply assure top toll-quality performance.

AUTOMATIC ELECTRIC

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West Coast Pioneers With Blind Operator at Identifying Post

A SERIES OF experiments to determine the ability of blind persons to function efficiently as DDD identifying operators was recently completed by the West Coast Telephone Co. of Everett, Wash.

In the words of D. A. Perigo, the company's general traffic superintendent, "The experiments have been a revelation to all who have witnessed them."

The study originated, Mr. Perigo explained, as the result of a telephone call he received from Ross Anderson, controller of West Coast Telephone.

Mr. Anderson, who also is president of the Central Lions Club of Everett, related how he and other Lions members had been urged to take a look at their companies to see if there weren't some areas in which blind persons might be employed to advantage. "I was just over in the traffic office," Mr. Anderson added, "watching the girls handling the DDD identifying calls. Can't a blind person do that?"

"For several seconds," Mr. Perigo said, "I was speechless, then somewhat incoherent, and finally mumbled something like, 'Why pick on Traffic?' Then it struck me that, with our identifying system, the operator works from a beep-beep tone, rather than from a visual signal; but I also recalled there was a visual signal for some purpose. At any rate, I agreed to look into the matter."

Several months passed after that first telephone call, and during that time, a great deal of activity took place. First, the idea was discussed thoroughly with West Coast's traffic training people, with the engineering staff and other company personnel. The training people became enthusiastic about the project and lined up a training course for blind identifying operators.

"We have been convinced for some time that there is a definite fatigue factor involved in operating the identifying positions," Mr. Perigo stated. "Many sighted operators find the job extremely monotonous. There even have been suggestions that pictures be painted on the wall in view of the operators or that a vase of flowers be placed nearby, and still another that we wire music into these positions."

In preparation for the experiments, West Coast engineers developed equipment which would emit a "click" to let the blind operator know when the visual signal operated. They then constructed a portable training set with a small cable equipped with Jones plugs so that the operator position and monitoring position could be placed several feet apart. With this arrangement, the instructor, by means of keys, can throw the various signals for the blind student. As the blind student operates, the keysender lamps are lighted on the monitor position.

Much of the success of the experiments is attributed to the efforts of the wife of one of the company's executives who, blind herself, offered to act as the test student. Still a little doubtful as to the outcome of the tests at this point, the company sent its training supervisor and the training set to the student's home for the initial training.

"I went out of town the day the training started," the traffic superintendent recalled, "and when I returned, I found the training supervisor so enthusiastic that she could hardly contain herself. But I still had to be shown, so I went along to witness one of the training sessions. Frankly, I, too, was amazed at the speed and accuracy with which the blind operator could handle the calls after only a few hours of training. But then it crossed my mind that perhaps she had become accustomed to the training supervisor, and the way she passed numbers to be keyed.

"Determined to find out if this were the case, I took my turn at the monitoring position and attempted to simulate the conversation of callers who talk with a mouthful of cigar, or who run all their digits together and are scarcely audible. Much to my amazement, the blind operator was less troubled by these situations than are our regular operators. I gave her wrong prefixes, coin-box numbers and numbers from vacant levels, but she caught me at it every time.

"The next day another man from our department tried everything he could to confuse her, but the speed and accuracy with which she handled the calls was as good as ever. We decided we were ready for the big trial—handling of commercial traffic."

As it turned out, this phase of the testing proved less problematic than anyone could have anticipated. The student took to handling commercial traffic "as a duck takes to water." Hourly stopwatch observations of her performance under actual working conditions showed that the sightless operator was only about one second slower than experienced operators.

"The experiments were so successful," said the traffic chief, "that there is no doubt we will soon be using blind operators on our identifying positions. It is most unfortunate, but true, that there is a strong tendency on the part of those persons who are not handicapped to be only sympathetic. Our experiments have shown us how wrong this attitude is. The handicapped need opportunity, rather than sympathy, and we feel it is our obligation to the community to use handicapped persons whenever and wherever we can."

The following paragraph, taken from a letter written to West Coast's training supervisor by the lady who aided in the experiment, illustrates the urgent need for employment experienced today by handicapped persons throughout the United States:

"Please believe that the success of these experiments has given me much more satisfaction than the slight effort that was involved. If it results in employment, and a measure of independence for other blind people, then our time was well spent. For a handicapped person, the knowledge that one can be self-supporting, if need be, is reassuring and a needed boost to the morale."

Joyce, daughter of I. J. Anderson, manager of Northern Ohio Telephone Co.'s New London exchange, built the working dial telephone she holds as part of junior high science project. A seventh grader, Joyce used a cigar box and parts, mounted dial on lid of box, and placed transmitter and receiver on the side, with switch hook at bottom, and operating when box is picked up. Her entry won recognition in four school science fairs.

Because of West Coast Telephone's

Personalized service pays off for you

HARRY: "Chet, I have a problem. Maybe you can help me."

CHET: "That's what I'm here for, Harry. How can we be of service?"

HARRY: "I need a tri-directional sign . . . a couple of hundred splicing sleeves . . . and two beige wall telephones."

CHET: "No problem at all, Harry. I'll take care of it."

HARRY: "But Chet—I need this stuff 'yesterday.' I know it's not much of an order, but can you rush it?"

CHET: "I'll get it out this afternoon, special delivery."

HARRY: "Thanks a million, Chet. Sure appreciate it."

CHET: "Well, we appreciate getting your order. Every single one is important to us, regardless of size."

HARRY: "How about that!"

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"Shelf-ettes"

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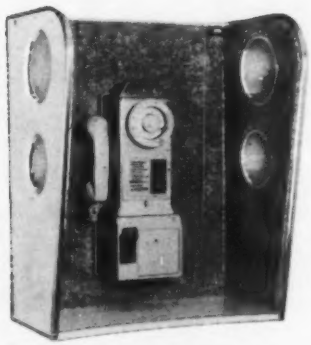

ACOUSTIC MODEL GP4010 CP

Increase your revenue with modern, attention-getting telephone mountings. Especially designed for hard usage, SHELF-ETTES add prestige and beauty to any locale. Available in a variety of models . . . in decorator colors. Many Knock-Down units with interchangeable parts. Modern, attractive signs . . . lighted or non-lighted. Directory shelves are easily attached to SHELF-ETTES. Three basic backboard materials are used: Formica, Perforated plastic, and Carpet. Gladwin's SHELF-ETTE provides the most outstanding public telephone mounting available in the industry.

Model GP4020 — Built in lighted top design. Formica or nylon carpet (Acoustic) covered backboard; Formica covered shelf. **Model GP4010 CP** — Acoustic carpet interior. Shipped knocked down. **Model GP4010 C—List 2**—Nylon carpet (Acoustic) covered backboard (or without backboard); Formica covered shelf. Shipped knocked down.

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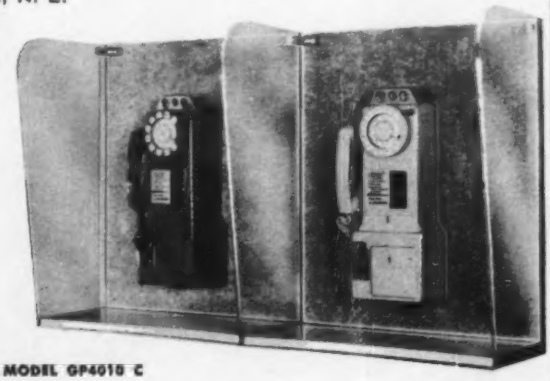

ACOUSTIC MODEL GP4010 C

convictions, the story of the blind operator there appears to be just beginning. By the time the account of the experiments could be completed, the company had hired its first sightless manual identification operator.

Mrs. Mertis Bergevin, a petite blonde with a ready smile, began her training on May 23. It was expected that by June 6 she would be ready to take her place in West Coast's Everett traffic office.

On her success, West Coast says, ride the prayers and expectations of other similarly handicapped persons. For their sake, the company hopes the story never ends, and that Mrs. Bergevin's experience represents the climax to a successful first chapter.

Executive Workshop To Be Held by Pa. Association

The Pennsylvania Independent Telephone Association and Pennsylvania State University will sponsor an executive development workshop Sept. 11 through 16.

To be held at the Allenberry Inn, Boiling Springs, the five day session will take up the following topics:

Realizing management potential.
Communications, the pathway to increased efficiency.
Personal aspects of good management.
The release of human potential.
Reaching for tomorrow.

Workshop education, it is pointed out, provides intensive training over a short period of time, as well as the opportunity for sharing combined experience and knowledge.

Actual participation by workshop members is insisted upon and individual attention is offered. The ratio of instructors to students is one to five.

Members of the executive management workshop committee are L. R. Thurston of the United Telephone Co., Harrisburg; H. Y. Smith of Columbia Telephone Co.; J. H. Swope of Bethel & Mt. Aetna Telephone Co., Myerstown; A. C. Herbert, executive vice president of the Pennsylvania association; Dr. O. Hoyt Tribble, coordinator of workshops, Pennsylvania State University and N. O. Cattell, assistant regional director, Pennsylvania State University.

Registration fee is $115. Rooms and meals are additional. Rates at the Allenberry Hotel for a twin-bed room and meals, from Sunday evening through Friday noon, will be $65.

Registration is limited to 40 and enrollment forms can be obtained from A. C. Herbert, Pennsylvania Independent Telephone Association, Payne-Shoemaker Building, Harrisburg, Pa.

REVIEW OF NEW PRODUCTS

Continued from page 30

(serial) output, hundred-word-per-minute transmission and reduced power requirements. Optional contacts are available for multi-wire output. Models may be had to read five- or six-level chadless or fully perforated tape.

The new set is proposed for a wide range of tape reading applications, including on-line data transmission over existing communications facilities, and off-line control of tape-operated factory or office machines. In addition to overall space economy, the set's compact size is expected to permit installation in spaces heretofore too small to utilize.

Components of the Model 28 Miniaturized LXD set, such as the transmitter-distributor portion, are available separately (without motor, base or cover) for integration with system's equipment.

•

Automatic Message Relay Set (Fig. 24). An all-new automatic message relay set to the Model 28 Line of communications equipment also has been announced by Teletype.

The new unit, called the Model 28 RT (reperforator transmitter-distributor), is a self-contained, punched tape message relaying facility for receiving wire signals at speeds ranging from 60 to 200 words per minute, converting them into perforations in paper tape and transmitting them at the same or another speed to local or remote receiving stations.

It is designed for a variety of uses in communications, data processing and

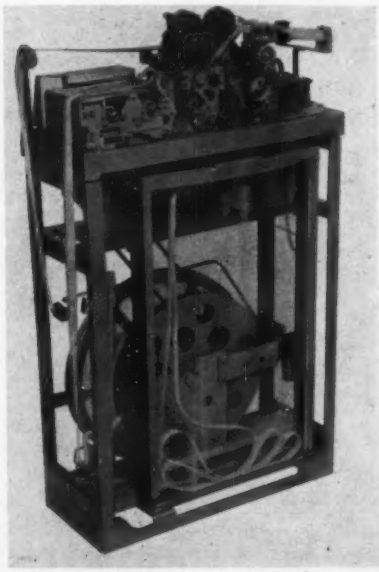

Fig. 24. Automatic message relay set.

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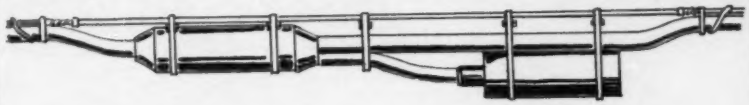
IN CUSTOM MADE LEAD OR STEEL CASES
FOR USE ON LEAD OR PLASTIC CABLES

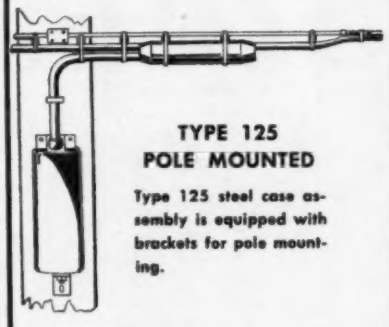
TYPE 124 LEAD CASE FOR AERIAL MOUNTING



TYPE 124 LEAD CASE

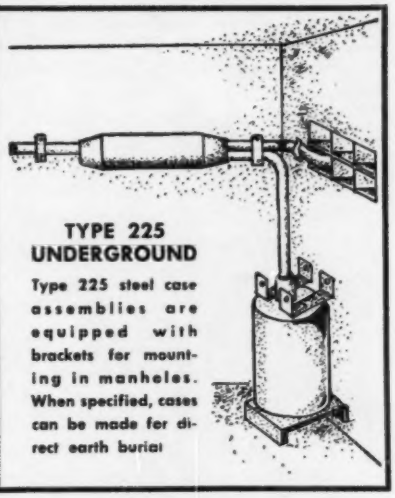
STEEL CASE ASSEMBLIES

- ALL LEAD STUB ASSEMBLIES ARE PRESSURIZED
- ALL PLASTIC STUB ASSEMBLIES ARE HERMETICALLY SEALED



TYPE 125
POLE MOUNTED

Type 125 steel case assembly is equipped with brackets for pole mounting.



TYPE 225
UNDERGROUND

Type 225 steel case assemblies are equipped with brackets for mounting in manholes. When specified, cases can be made for direct earth burial

Voice frequency coils, type 632(88MH) and 638(44MH) are primarily designed for use on two wire telephone cables. Types MF10, MF11, 641 and 642 coils are furnished for quadded interoffice and toll cables. Special coils can be made to meet other requirements.

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automation. Included in these are applications as an input-output speed converter, intermediate message storage, business machine-communications linkage, automatic data accumulator and control device for automated factory equipment.

The RT set features three message relaying devices: (1) A receiving unit for accepting incoming wire signals, punching and printing the signal data on a standard 11/2-inch, five-level "common-language" paper tape; (2) a sending unit for reading and translating the taped data into electrical impulses for transmission either cross-office or cross-country, and (3) a tape handling unit with tape supply reel, intermediate tape storage bin and tape winder reel.

A choice of three tape punching components is available for adapting the RT set to a wide range of individual application requirements—a typing and a non-typing tape punch for accepting sequential (serial) signals and a non-typing tape punch for accepting parallel signals.

A special-design twin-shaft sending component features transmission of sequential or parallel-wire signals and automatic end-of-message shut off.

Receiving and sending units will operate at the same or different speeds, e.g., receive at 60 WPM, transmit at 100 WPM.

Model 28 RT sets may be mounted singly or in pairs in a newly designed universal cabinet featuring on-off switches, tape warning lights and other facilities essential for external control of equipment within the cabinet.

(To Be Continued)

TERRAIN PROFILING ELECTRONICALLY

Continued from page 23

other obstructions indicated, and the necessary clearance factors computed and plotted.

If requested, a ground check by sensitive altimetry is conducted to gather necessary data concerning each tower location, elevation above sea level, access, construction information and availability of power and telephone service. This information is presented in the final Radar Profile Reports on site description pages.

Site elevations, referenced to satisfactory bench marks, are determined by standard ground altimetry, using American Paulin System equipment and dual altimetry procedures. Heights of trees and other obstructions are measured by triangulation and the selected tower locations marked, if desired. Site elevations data obtained from the ground measurements is used to adjust the path profiles to reflect absolute elevation above sea level.

The complete field data is submitted to the client for examination and preliminary approval, then forwarded to the home base for the engineering check. As soon as possible after full information is received from the field, "process profiles" in the final form are mailed to the client, and on the basis of these, mutual agreement as to the tower heights to be used at the terminal and repeater sites is reached.

With tower heights designated, the final report is prepared and delivered. Five copies of the final Radar Profile Report are normally provided, with extra copies available to the client at additional cost.

Final Reports

Each microwave path, which is the free space between the transmitter and the receiver or reflector, is included in the final report as the profile of the terrain over which the microwave sig-

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nal passes. At least one oblique picture enlargement is included for each terminal site, and at least two at each repeater site (one in each direction along the paths), but where the site characteristics so dictate, more photos are included.

Also a site description and a site sketch are included for each site, if this service is required by the contract. These, as a group, contain information of path and reference directions, existing roads, access information, geographical locations, and other data relative to the site. Also included is a complete route map of the system, indicating each station by name, and distances in miles between adjoining stations, plus bearings from each station to the next.

Guarantees

The accuracy of the Television Associates of Indiana, Inc. profiling system is guaranteed through insurance underwritten by Lloyd's of London.

Applications of Technique

Although this method of profiling has thus far been used only to survey microwave communications systems, it has application to other facets of industry which have need for knowledge of terrain features, contours, elevations, etc., along a given path, whether it be straight or not. Pipeline installations and power line transmission routes are but two which can utilize such a speedy and economical method of determining useable data supplied by this profiling technique.

WISCONSIN CONVENTION

Continued from page 36

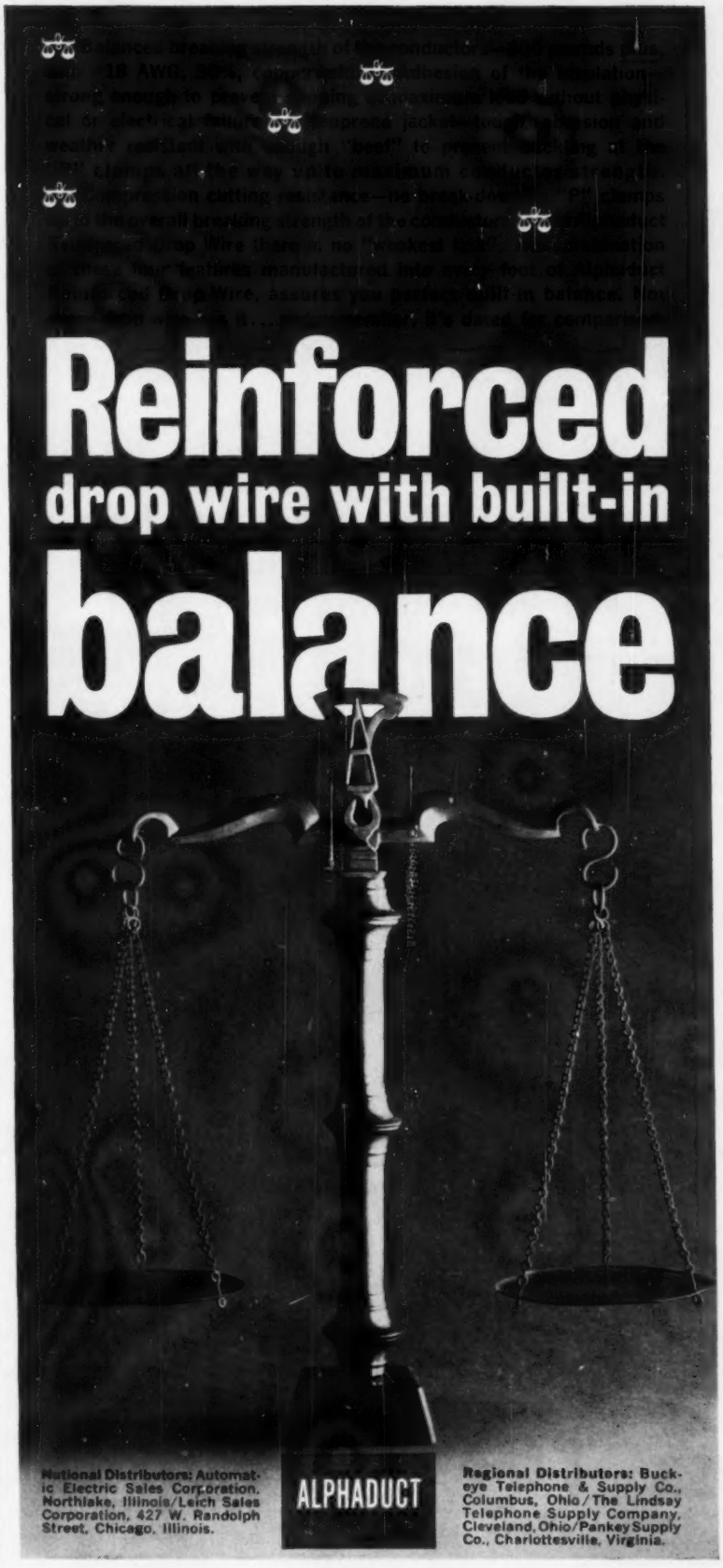
over 100,000, Mr. McHenry stated; also, 100 companies now have incomes over one million dollars annually. Despite this strong showing, Mr. McHenry said the industry needs:

Recruitment of more young people.
More technical trainees to handle increasingly complex operating problems and equipment.
Higher training standards.
More investors.

Mr. McHenry also said, "In the present state of industrial competition between sections of our country, between states, and even between cities in individual states, you can see that the ability of telephone companies to render good service and to expand is very essential."

Ray J. Riordan of Madison, association secretary, in his report stated the past year's activity the association is most proud of was its merchandising seminar at the University of Wisconsin (reported in TELEPHONY, Oct. 10, 1959).

Mr. Riordan reported that the fall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drop wire with built-in
balance
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ALPHADUCT
Regional Distributors: Buckeye Telephone & Supply Co., Columbus, Ohio/The Lindsay Telephone Supply Company, Cleveland, Ohio/Pankey Supply Co., Charlottesville, Virginia.

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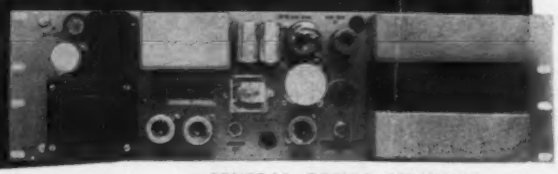
...without additional cable!
...without more open-wire lines!
...without impairing or interfering with existing service!

TYPE 46-A POSTPAY PAYSTATION CARRIER

OFFERS SEVEN CARRIER CHANNELS ON A SINGLE PHYSICAL CIRCUIT — EXISTING OR NEW



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The ideal, low-cost way to provide additional *high-quality* postpay paystation service — where wire facilities are not available — where plant expansion for such facilities must be postponed — where additional seasonal postpay paystations don't warrant expensive plant installation.

★ *Low First Cost* . . . uses standard AM principles to simplify and minimize components — and low frequencies, below 140-kc.

★ *Low Installation Cost* . . . simplicity assures it. No expensive test equipment needed — and no time wasted using it. Built to "Connect and Operate".

★ *Low Operating Cost* . . . a complete channel uses only 9 tubes of 2 types. We can show you savings figures!

★ *Low Maintenance* . . . Rugged high-quality components with ample safety factor. Tubes at any radio or tv store. No need for spare channels.

★ *100% Recoverable* . . . and easily. You can quickly relocate any station in a more favorable spot.

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BUCKEYE TELEPHONE & SUPPLY CO.

1250 Kinnear Road Columbus 21, Ohio

Telephone — HUdson 8-0655 (Area Code 614)

conference was an outstanding success —almost a second state convention now.

The association is planning a carrier school due to the tremendous interest in this phase of plant, he said.

Gaylord L. Nelson, governor of Wisconsin, in his talk, analyzed the statement: "The government produces nothing." He said the test should be how well the government performs services or functions it is best fitted to perform. He believes one of the most important areas of government responsibility is education — in effect, good education amounts to conservation of our natural resources.

Governor Nelson feels that citizens too often neglect being interested in state governments; consequently, these governments are often inefficient. He said they seldom have instituted improved business methods because political leadership hasn't been concerned with improving efficiency.

The governor told of setting up task forces of businessmen to streamline various aspects of Wisconsin's state government — office space utilization, and budget analysis, for example.

"High Speed Machine Billing" was the subject of a color film strip and talk by I. L. Thode of Service Bureau Corp., an IBM subsidiary. Mr. Thode said the Service Bureau Corp. is equipped to perform the complete accounting function for telephone companies. Even for small Independents, the company processes mark sensing information. This can generally be accomplished in two to three days for somewhere around $300 for 1,000 subscribers.

"The technological developments of the next half-century will dwarf those of the last half-century," predicted Dr. Miles J. Martin, manager, research information, General Electric Co., in his talk, "Today's Research — Tomorrow's Progress."

The reason is, he said, that technological advance comes from new learning, research and development; and 50 years ago little was spent on research. In fact, more was spent on research in the last five years than in all the years from the signing of the Declaration of Independence until 1954. Generally, he said, there is a 10-to-15-year span from the beginnings of research on a product till it reaches the production line.

Using a color film strip, Dr. Martin demonstrated how sometimes pure research (that is, with no immediate application) often may contribute to scientific advance in unexpected ways; in any event, the pure research advance adds to the body of scientific knowledge. Dr. Martin also considered the futures of ceramics, chemistry, metallurgy, electric power and other fields. He estimated there is a 50-50 possi-

bility of our some day driving electric-powered cars.

The convention elected four new directors:

Tony M. Gotstein of Casco.
George F. Griffin of Amery.
William Rowland of Madison.
G. A. Rutenbeck of Milwaukee.

Other directors are:

H. G. Allen of Tomah.
E. L. Beyl of Osceola.
Phil Bigley of Viroqua.
Allan C. Brown of Rhinelander.
D. H. Hansen of LaCrosse.
J. H. Hesselman of Mondovi.
Gilbert A. Karcher of Burlington.
H. L. Olson of Weyauwega.
R. G. Peterson of Wittenberg.
L. J. Robertson of Platteville.
F. H. Schafer of Clintonville.

The directors elected the following officers:

President, Mr. Robertson.
Vice president, Mr. Hansen.
Secretary-treasurer, Ray J. Riordan of Madison.

PLANT MAN'S NOTEBOOK

Continued from page 40

tact area; extruding the plastic from the contact area through perforations in the connector; piercing the insulation by means of sharp projections or cutting edges; melting the plastic from the wire end, or shearing the plastic from the conductor at the points of contact. The shear method was adopted as being the most reliable and permanent.

In 1958, following about two years of laboratory work, and experiments with several versions, the first model was produced and placed in the field for test and evaluation. This connector employed the shear technique for displacing the conductor insulation, was self-sealing with silicone grease and was universal for all commonly used wire sizes.

However, this connector presented two serious objections. It required expensive production techniques, and the pneumatic tool necessary to squeeze the connector was expensive and not practical for general field use.

The connector program at 3M was thoroughly reappraised early in 1959. It was apparent that the practical answer involved a variation of the shear method that contained the essential ingredient—resilient spring compression reserve—and also retained installation simplicity and production economies.

These features are all incorporated in 3M's "Scotchlok" Type UR cable conductor connector. In squeezing the connector button into the body of the connector, and forcing the metal fingers

MECHANIZE SCREW ANCHOR INSTALLATION

You've got the means... your power hole-digging equipment. Use it to install Chance Screw Anchors in 5 to 8 man-minutes... *from the time the equipment is moved into position until the anchor is ready for the guy.*

Chance Power-Installed Screw Anchors, ranging from 78 to 176 square inches in area, go down fast into all types of soil (except extremely rocky soil). The sharp cutting helix of high-strength structural steel is tapered to minimize earth disturbance. And, hundreds of installations and pull tests prove these anchors hold more with less creep than any anchors of comparable size.

Your present power boring equipment, regardless of type, can be easily adapted to power anchor installations. Add to this equipment... the special wrench shown at right. It transmits torque from the power equipment directly to the specially designed hub on the anchor helix. Wrenches are made to fit all popular makes of earth borers. And, since the anchor rod is not subjected to torque, it only has to be heavy enough to support the guy load. That's a cost-saving factor too.

So, mechanize screw anchor installations. Install Chance Screw Anchors, and get:

Lower installation costs per anchor
Better utilization of expensive equipment
Greater holding power with less creep
Consistent results
Elimination of human variables and error
Less physical effort, better employee relations

Contact your Chance Representative. Now. He'd like to tell you more about mechanized anchor installation, show you test results and help you apply this new technique to save time, cut costs, and improve your anchoring.

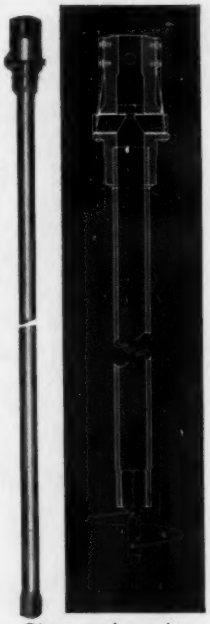

Diagram above shows how the special wrench fits the anchor. Wrenches are made to fit all popular makes of earth-borers.

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Centralia, Missouri
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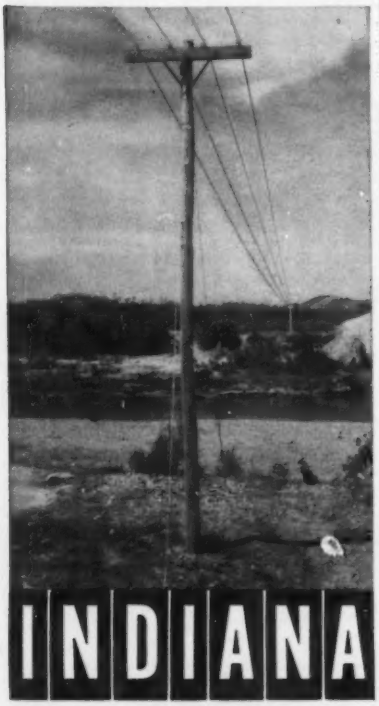
Crapo
HTL-195
EXTRA HIGH-TENSILE TELEPHONE LINE WIRE
for low-cost Rural Lines

• Spans up to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading districts are possible where Crapo HTL-195 is employed. This extra long span construction results in marked savings in costs per mile of line. Pole structures can be reduced to a minimum. Fewer pole structures mean substantial savings both in materials and man-hours of labor. There is less hauling to be done, fewer holes to dig, less material to be handled, installed and connected.

Improved electrical qualities make practical typical subscriber loops of 14 to 15 miles with normal voltages and equipment. Also can be used for subscriber carrier.

Write for Engineering Manual No.TM-59



INDIANA
STEEL & WIRE CO., INC.
MUNCIE, INDIANA

over the wire, an outward pressure is exerted on the back of the connector element. This constant pressure, in trying to return to its original position, maintains a constant force on the conductors and insures a positive electrical connection. With this principle designed into the connector, problems of failure and erratic service were overcome.

The second area of effort in development of the connector, sealing and insulating, presented less-serious basic problems since the moisture-proofing qualities of silicone grease have been demonstrated and accepted in the earlier grease-filled splicing sleeves. Experiments with various connector shapes indicated the one selected as being easy to handle and suited to space requirements of the splice enclosures currently in use.

In addition to thorough and exhaustive laboratory tests, designed to accelerate aging of sample connectors under artificial means, approximately 300,000 connectors have been placed in field services during the past year. Installation has been made under various types of adverse conditions: Under a variety of physical and geographical conditions, including mountainous, swampy, and stormy areas; hot, cold, and humid weather, and under repair conditions. All tests and reports have indicated that the new connector is dependable, with the high reliability necessary to meet all field conditions.

The new "Scotchlok" connector is designed to accommodate any two or three-wire combination of #19 to #26 AWG solid or #20 to #26 AWG stranded wire, and handles all common types of insulation, including plastic, rubber, enamel and teflon. The resulting splice is claimed to be functional, the equal of twist-and-solder joining methods, with an average pull-out resistance equal to 95 per cent of the wire breaking strength.

Made of a transparent thermoplastic material, filled with silicone grease, and incorporating a metal finger-like connector element, the "Scotchlok" makes available for the first time a simple method of making cable conductor splices. To make a splice, wires are inserted into the connector and secured by simply squeezing a button into the connector sleeve. As the button is depressed, the finger-like connector element strips the insulation and grips the conductor firmly, providing a strong mechanical and electrical connection. The thermoplastic sleeve insulates and protects the splice, and the factory-installed silicone grease moisture seals the joint.

Visual inspection of the connection through the transparent sleeve, and the flush position of the red button when fully depressed, insure quality splices every time. A lightweight, crimping tool equipped with parallel action jaws has been especially designed to speed application and insure complete actuation of the connector.

Splices made with the connector on cable up to 400-pair in size will fit into splice cases and enclosures currently in use.

It is our honest opinion that this connector will improve cable splicing by bettering the quality of connections and reducing their cost.

Name Controller, 2 Aids For General of Kentucky

Donald A. Redman has been named controller of the General Telephone Co. of Kentucky to succeed Leonard W. Snodgrass who is transferring to General Telephone of Pennsylvania, it was reported on May 25.

D. A. REDMAN

B. H. PENROD

Mr. Redman, a native of Pennsylvania, has been assistant controller of General Telephone Co. of Kentucky

WAYNE STERLINSKE

since 1956. He previously held various positions in the secretary-treasury and accounting departments of the General Telephone Co. of Pennsylvania.

He is a graduate of Gannon College, Erie, Pa.

Bill H. Penrod and Wayne Sterlinske were named assistant controllers.

Mr. Penrod is a native of Lexington and joined General Telephone Co. of Kentucky in 1951. He has held various positions in the accounting department.

Mr. Sterlinske joined General Telephone in 1958 as accountant and has served in various positions in the accounting department. He is a native of Wisconsin and attended the University of Wisconsin.

Military Asks Civilian Inventors for Ideas

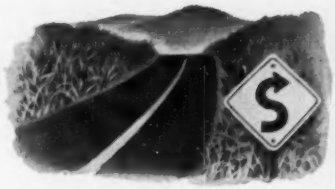
The National Inventors Council, U.S. Department of Commerce, on May 23 asked the help of the nation's civilian inventors in producing 60 new devices and systems sought by the Armed Forces.

Inventions needed to better equip the military man of today include an individual range finder for infantry troops, a substitute for sonar for the Navy, and lightweight flight armor to protect pilots as well as ground personnel from armor piercing ammunition. Also in demand is a disposable cook stove for field use that can be thrown away after the meal is heated.

The job of rounding up these and other inventions to promote national security is the mission of the National Inventors Council, which serves as liaison agency between the civilian inventor and the Armed Forces. It is composed of distinguished civilian scientists and engineers and the research chiefs of the Army, Navy and Air Force, with Dr. C. S. Draper, head

Whatever your brush problem

Line?



Roadside?

Right-of-way?

WEEDONE can solve it!

With the right background—Chemical control of weeds and brush has developed along established lines of procedures and practices. Amchem initially pioneered the major advances in the field, has originated many of today's accepted procedures and products for efficient, economical weed and brush control. Your problems are in *experienced* hands when you hand them to Amchem!

With the right approach—Amchem's corps of weed and brush specialists are basically application specialists. Combining comprehensive theoretical and practical experience they are able to offer all industry a realistic approach to *any* weed or brush problem. These specialists have developed a variety of efficient weed and brush eradication programs over thousands of miles of line, roadside and right-of-way areas once choked and inoperable due to infestation.

With the right product—Amchem's tremendously diversified product line is your assurance that the right weed and brush killer is available and will be utilized for your specific problem. Weedone Brush Killers, for example, have been used in the field for years and proven eminently successful in eliminating weeds and brush wherever they are a problem. Why not bring your problems to Amchem?

Amchem and Weedone are registered trademarks of Amchem Products, Inc.

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AMBLER, PA.

Please send me copies of your "Brush Control" brochure and full information on the uses of Weedone Brush Killers.

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BRUSH KILLERS

another chemical development of
Amchem Products, Inc.
(Formerly American Chemical Paint Co.)
St. Joseph, Mo. • AMBLER, PA. • Niles, Calif.

Superior's

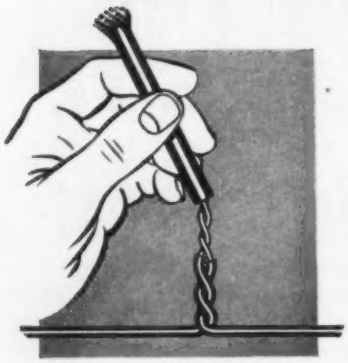
"Super-Splice"®

is

safe

and

sure!



"Super-Splice" makes splices waterproof . . . from inside out!

Sealed at one end, this plastic splice sleeve is filled with an insulating and waterproofing compound.*

Economical "Super-Splice," a Superior exclusive, makes the splice permanently as good as the cable . . . yet it can be re-entered easily. The compound never hardens or oozes out no matter what the temperature.

Prevent leakage currents and breakdowns in the presence of moisture...good for 25,000 v.d.c. Order "Super-Splice" NOW!

*A Dow-Corning silicone compound.

An REA Standard.

"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

of the department of aeronautics and astronautics, Massachusetts Institute of Technology, as chairman. The council's administrative staff is part of the Commerce Department's Office of Technical Services, whose director, John C. Green, serves as executive director of the council.

Since 1940 the council has been capitalizing on the inventive brainpower of the American public to solve military problems in technology. Many of the valuable inventions of World War II, such as the land mine detector and hand signal mirror, were processed through the National Inventors Council.

The list of inventions wanted encompasses nearly every field of scientific research. Electrical and electronic problems include the search for a flutter-free antenna system, capable of reducing signal flutter to usable levels.

The council is also seeking a way to compress the present 300 to 3,500 cycle-per-second speech spectrum into a bandwidth not over 150 cycles-per-second. After frequency compression, the speech must be indistinguishable from the original.

Ideas for better lightweight housing for radar beacons, and neutron shielding that can absorb or reflect radiation are also wanted.

In applied mechanics and equipment engineering, there is the need for a low-cost dry battery heater, and a burner mechanism able to deliver up to 21,000 BTU per hour. In aviation, an aircraft fuel safety system is urgently needed, as well as a slick veneer or other type of coating for aircraft surfaces.

In missile instrumentation and measurement the military needs an accurate missile altimeter, an impact acceleration measuring and recording device, and an instrument which would enable an approaching missile to "sense" its height above the target.

The 60 inventions and technical systems needed are listed in a publication released by the council to science and industry entitled "Supplement to Technical Problems Affecting National Defense." The new supplement and the basic list of previous unsolved problems may be obtained by writing National Inventors Council, OTS, U.S. Department of Commerce, Washington 25, D. C.

IN THE NATION'S CAPITAL

Continued from page 20

tics that led to their convictions. Police obtained evidence by setting up a listening post in a row house next door to their headquarters. The officers pushed through the common wall a small antenna connected with a battery-operated device that made the conversations audible. With the aid of earphones, the police could hear the trio carrying on their wagering business by telephone. On this basis, the officers obtained a search warrant on Apr. 30, 1958. They found betting paraphernalia indicating a $40,000 daily operation.

Washington attorney Edward Bennett Williams, representing the gamblers, contended police had violated the Constitution's guaranty against "unreasonable searches and seizures." Williams said: "The scientific advances during the past two decades in the field of electronic eavesdropping devices, the increasing frequency of their use by federal officers, and the resulting threat to the security of the people in their homes from unreasonable auditory searches by federal officers, commend the evidentiary problems posed by this case to review by this court."

The Supreme Court held in 1928 that wiretapping does not violate the constitutional guaranty because the Fourth Amendment applies only to physical things "not to evidence secured by the sense of hearing." More recently some of the justices, now on the highest court have indicated a desire to overrule this decision.

No Anti-trust Suit for NBC

In addition to the telephone long distance rate area, the House Judiciary Committee's busy little chairman, Representative Celler of New York, has been needling the Justice Department about the TV station ownership of National Broadcasting Co. Celler thinks that Justice should take up the matter of NBC network affiliations in Boston and San Francisco.

But the Justice Department declined to challenge the NBC plan in a federal court in Philadelphia. Acting Federal Anti-trust Chief Bicks confirmed, in a letter to Chairman Celler, that the anti-trust inquiry has been ended. Instead, Mr. Bicks urged the FCC to examine whether a switch by NBC of its network affiliations in the Boston and San Francisco areas "may result in economic injury" to stations operated by Westinghouse Electric Corp. in Boston, and by Chronicle Publishing Co. in San Francisco.

The letter does not amount to Justice Department approval of the NBC plans. But, Mr. Celler, who has criticized the department for failing to stop the NBC proposal, reacted sharply to

put 'em up and forget 'em

. . . That's what you do with T-C Pressure-treated poles. And you rest assured you have poles to serve for generations. There's a very simple reason why . . . T-C Poles get the best in preservation, the best in chemical preservatives and the best controlled pressure treatment so far developed by modern Technology. Next time specify T-C Pressure-Treated Protection . . . Put 'em up and forget 'em . . . for generations.

Specify T-C

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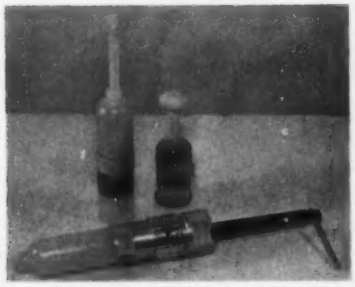
TAYLOR - COLQUITT CO.

SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

New PRESSURIZED CABLE DAMMING METHOD



The introduction of Semco Sales & Service, Inc., two-part SemKit, has eliminated the problems of mixing and applying resin to pressurized cables. Eliminates incorrect proportioning from one container to another for the mixing operation. Material after mixing will not contaminate the applicating gun.

Mixing of the SemKit is done by:

1. Removing tape Clinch Band from cartridge.
2. Pulling dasher rod to neck of cartridge.
3. Deforming the foil barrier to combine base and activator for mixing.
4. Rotate Dasher assembly in a clockwise motion until material is completely mixed.
5. Pull dasher rod to neck of cartridge and remove.
6. Place cartridge in 755 Screw Gun for application.

Application of the Resin

Place mixed cartridge into 755 screw gun and lock in place with stainless steel retainer Screw in fitting from cartridge to injection fitting and apply. After application remove cartridge from gun and discard.

No cleanup of gun.

No contact with the resin.

No possible chance of skin contact with the resin.

No clean up of personnel.

Numerous operating telephone companies are now using this method of application. Better application methods reduce costs.

For further information contact:

SEMCO SALES & SERVICE INC.

3141 WEST CENTURY BOULEVARD
INGLEWOOD 4, CALIFORNIA

Patent No. 2,838,210 Others Pending

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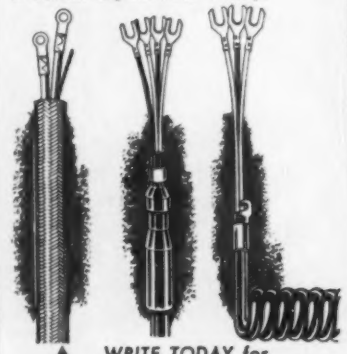
...and that's no joke where phone cord serviceability is concerned

Whether it is a handset, deskstand, switchboard, or inter-communication system cord, COMCO quality guarantees top year-in, year-out performance. From rugged Spiraflex Retractile cords in standard or extended lengths (10, 15 or 25 ft.) with black or colored P.V.C. jackets, to durable Nylon jacketed Operator cords, in black or brown, each COMCO Cord boasts built-in reliability to eliminate service worries. Moreover, all standard cords are in stock, ready for rapid delivery on your order!

Special cords a COMCO specialty, too!

Patch cords, transmitter cords, test and inter-communication cords are all quickly available from COMCO, and cords made to your exact specifications require little more than an immediate delivery schedule. Determining the exact time required for delivery of your problem cord takes only a call to COMCO. Why not make it today?



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the Bicks letter. He threatened an inquiry of the TV broadcasting industry by a sub-committee of his judiciary panel. NBC has agreed to trade WRCV-TV in Philadelphia for Boston's WNAC-TV, owned by RKO General, Inc., broadcasting subsidiary of General Tire & Rubber Co., and to buy independent TV station KTVU in Oakland from San Francisco-Oakland Television, Inc. If it gets permission to make these moves, NBC would grant WNAC-TV and KTVU network affiliation now held by Westinghouse's WBZ-TV in Boston and Chronicle Publishing's KRON-TV in Oakland.

Bicks' letter to Celler was designed to explain why the Justice Department did not object to NBC's plans. The department has review power, under the anti-trust consent decree issued last September, over acquisition by NBC of a station in any of the nation's top eight TV markets. Bicks explained, however, that "the most thorough investigation and study of both transactions" planned by NBC turned up no evidence that the anti-trust decree was violated.

The decree settled a government suit against NBC and its parent, Radio Corp. of America, charging their acquisition of a Philadelphia station from Westinghouse in 1954 violated the anti-trust laws. The order requires NBC to give up the Philadelphia station. Even if the court approves, NBC still must get FCC approval.

Wage-Hour Law Changes

A House labor sub-committee agreed informally on June 1 on a compromise bill gradually increasing the $1.00-an-hour federal minimum wage to $1.25. The bill would bring under the Wage-Hour Law 4,182,000 workers—mostly in large retail stores — who are not now covered. Rep. James Roosevelt (D., Cal.), the bill's author, estimated that it would give pay hikes to 3,280,000 current wage earners. Included in the bill was the provision limiting the exemption of telephone exchange operators to companies with annual sales of less than $150,000 a year. The yearly graduated minimum wage to other telephone companies now having the advantage of this exemption was explained in this department last week.

The sub-committee presented the compromise plan to the entire 30-member Labor Committee for its consideration. The sub-committee did not take a formal vote to approve the package bill, since some members favored additions to or subtractions from the plan. The new package is a compromise between a broader bill originally sponsored by Roosevelt and backed by the AFL-CIO and the administration's proposal to boost the minimum wage to $1.10 or $1.15 and extend coverage to 2.5 million more workers. Under the compromise plan, the wage floor for workers now covered would be raised to $1.15 on Nov. 1; $1.20 a year later, and $1.25 in November, 1962.

A $1.00 minimum would be set Nov. 1 for workers who would be brought under the Wage-Hour Law. This minimum would be boosted five cents per year until it reached $1.25. Roosevelt estimated that the plan would give raises to 2,420,000 presently covered workers and 860,000 newly covered wage earners.

Coverage would be extended to workers in firms doing 1 million dollars or more gross annual business in the following fields: Retail trade, retail services including hotels, laundries, and dry cleaners, local transit, seafood processing, and logging. The present exemption for telephone workers would be revised to include large companies.

The plan provides that overtime for newly covered workers would start after 48 hours and be cut gradually to 40 hours in the fifth year. The bill would give presently covered workers in Puerto Rico, the Virgin Islands, and Samoa, where wages are set by committees, a 15 per cent increase this year, and additional 5 per cent increases in the following two years.

Stromberg-Carlson Assigns Poole to Atlanta Sales

Robert E. Poole Jr. has been appointed an industrial sales representative in the Atlanta branch of Stromberg-Carlson's Telecommunication Division, according to an announcement by T. C. Thompson, general manager of commercial sales.

Mr. Poole will serve major industrial and governmental procurement agencies in the Southeast territory, under the direction of W. L. Mollands, Atlanta branch sales manager. He will be responsible for the sale of telecommunication equipment and components, including carrier/microwave systems, supply materials and industrial type products.

Mr. Poole was born in Crewe, Va., and for the past 14 years, has worked in that state.

In 1946, he started with the Chesapeake & Potomac Telephone Co. of Virginia, in the plant department.

He gained further experience as a PBX installer and repairman, and later joined the United States Instrument Corp. as a sales engineer, working out of Charlottesville, Va.

A six-year Air Force veteran, he served as a fighter pilot in the European theater for part of his service tour.

KEYSTONE Telephone Wire . . .

when and where you need it!

From many convenient locations, quality Keystone Wire is available for the needs of the telephone industry. Keystone offers a full range of Class A line wire in 50M, 85M and 135M tensile strengths. All line wires meet the specifications of A.S.T.M. and A.T.&T. and are approved by R.E.A. Your Keystone Distributor also offers a full line of galvanized bond, tie and construction wire in a full range of gauges. For quality wire—and prompt delivery—contact your nearest Keystone Telephone Wire Distributor or write direct for information.

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Waterloo, Iowa

Dakota Electric Supply Co.
Fargo, North Dakota

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Oklahoma City, Oklahoma
Omaha, Nebraska
St. Paul, Minnesota

Kingsport Electric Co., Inc.
Kingsport, Tennessee

Line Material Industries
Milwaukee 1, Wisconsin

Marshall-Wells Canadian Companies, Ltd.
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Nelson Electric Supply Co.
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Lubbock, Texas

Jack Pruzan Co.
Seattle, Washington

Southern Electrical Corp.
Chattanooga, Tennessee

Suttle Equipment Company
Chicago, Illinois
Lawrenceville, Illinois

Tele-Wire Supply Co., Inc.
Jamaica, New York

Tennessee Valley Electric Supply Co.
Nashville, Tennessee

Wheeler Lumber Bridge & Supply Co.
Norfolk, Nebraska

KEYSTONE WIRE FOR THE TELEPHONE INDUSTRY
. . . by the makers of famous Red Brand Fence

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TEST EQUIPMENT

Locates Trouble FAST

Stewart
Full Transistor VOLTMETER

MODEL TR — For portable and field use. Accuracy and stability are combined in this laboratory instrument, with small size, light weight, easy use and ruggedness necessary in a carrying instrument.

NO TUBES

A completely transistorized Unit, most economical in battery consumption, size and weight. Requires no warm-up time.

High stability of the unit is achieved by two independent feedback loops, precision resistors and printed circuit wiring. High input impedance and freedom from fluctuations, hum and capacitance of power lines. Save time and assure better testing of carrier, communication circuits and equipment.

—50 DBM to +50 DBM, 11 ranges in RED. .003 to 300 volts, 11 ranges, in BLACK. Input impedance, 2 megohms shunted by 25 micro-microfarads. Accuracy 5% of full scale, 40 cycles to 600 KC. Meter reads RMS value of sine wave voltage. Reading is proportional to average value of impressed voltage.

Self contained 500 hour mercury battery. Aluminum case and cover with aluminum handle for carrying and support for unit on bench at an angle for easy reading from above or side. Size: 6½"x4"x3". Weight 2 lbs.

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Division of Instrument Laboratories
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News on New Products

"FIGURE 8" CABLE—A "Figure 8" type Alpeth cable, as shown in *Fig. 1*, has been produced by General Cable Corp. This cable is composed of two essential elements—the cable core and the messenger.

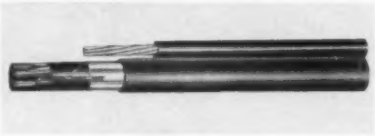

Fig. 1

But in the General Cable "Figure 8" Alpeth cable, a continuous polyethylene jacket is extruded over both components simultaneously. A polyethylene web is formed during extrusion as a bond between these components, the company says, forming the "Figure 8" configuration.

As a result, this cable is described as being a combined messenger and core as a single unit, economically produced for quick and low-cost installation.

Fig. 2

General Cable states that the "Figure 8" cable simplifies the installation process, allowing the two previously separate components to be installed at the same time in one operation, contrasted to the separate installation of the messenger and the subsequent field spinning of the cable.

Fig. 3

To add to the ease of installation, a clamp has been developed, the company reports, for tangent supports which grip the jacketed messenger. This clamp is shown in *Fig. 2*.

Fig. 3 shows the preparation of a standard splice at a temporary cable dead-end, which is said to be easily accomplished by use of conventional practice.

General Cable states that this cable differs from the Alpeth lashed to a

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Please have the manufacturer send me without obligation the literature indicated by the following numbers:

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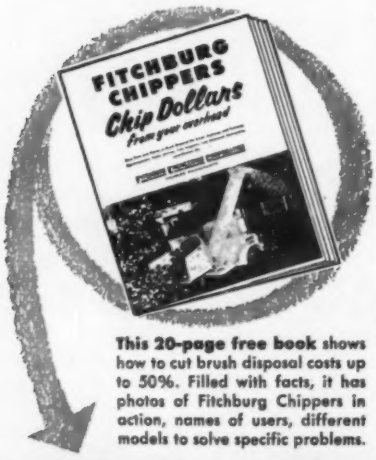

This 20-page free book shows how to cut brush disposal costs up to 50%. Filled with facts, it has photos of Fitchburg Chippers in action, names of users, different models to solve specific problems.

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messenger only in that the lashing wire is replaced with a polyethylene web. As the new General Cable "Figure 8" Alpeth telephone cable core and jacket are the same construction as the two separate components previously offered, normal practices and closures can be employed for splicing.

Fig. 4

Fig. 4 shows the "Figure 8" Alpeth telephone cable being raised to a high attachment with the assistance of a groundman. This installation was made recently in South Carolina by the General Telephone Co. of the Southeast. Request NP1345.

•

CONTROL STATION EQUIPMENT—Equipment for control stations operated in the 450-mc-band, which meets the requirements of the new FCC rules (April, 1960), is being produced by the Budelman Electronics Corp., Robert Feistel, sales manager, has announced.

Under the new FCC rules applicable to telephone and other companies, 450-mc-band radio links may be used for base station control in areas removed by at least 50 airline miles from the nearest boundary of the nearest urban area of over 300,000 population. Effective radiated power for the control stations is limited by the new rules to 150 watts.

Mr. Feistel pointed out that by using Budelman's type 14AN, 450-mc radio links, base stations used in mobile telephone, radio-dispatching or radio-paging systems, can be installed at advantageous locations and can be controlled from a remote location without land wire interconnection between the base and the remote control point.

Budelman equipment, the company says, may be used for conveying a single-voice channel and tone signals for control, or for conveying several voice channels, as well as considerable coded-tone information, Mr. Feistel added. If frequency assignments are not open, or the location of the fixed terminals is such that they are under the 50-mile airline boundary, the company also has available fixed station equipment, identified as type 14BN, which operates in the 952-960-mc-band in which there is normally a choice of frequency assignment available.

In addition to 450-mc and 960-mc multiplex radio equipment, Budelman manufactures similar equipment for the 2,000-mc-band which can be used by operators of private communications systems. Request NP1346.

•

UTILITY TRAILER—The Hustler Utility Trailer with a tilting deck is announced by Davis Mfg. Inc.

It is especially designed to carry the Davis T-66 self-propelled trencher, but is also adapted for a wide variety of other transporting jobs, the company states.

The Hustler is said to pull easily behind a car, and is readily maneuverable for safe, convenient pulling on residential streets and into home driveways.

The trailer features 2,000-pound capacity on a deck 4 feet wide and 7 feet long. It has a patented Prior-Linco axle with torsion springs to provide low center of gravity and load equalization.

Other features of the new Davis trailer include high-speed tires and all-steel, welded construction. Request NP1347.

•

CABLE SHEATH STRIPPER—P. K. Neuses, Inc., has announced a new cable sheath stripper called No. N-62267 for most types of cable jackets. It is said to be especially good for most of the outdoor, heavy-duty types of cable sheathings.

The slender hook blade, which is described as being tough and very sharp,

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ANDREW RADOME EQUIPPED ANTENNAS DEFY ICE...SNOW...WIND

Andrew radomes provide excellent 2-way year-round protection for Andrew microwave antenna systems. First, they protect feed and reflecting surface against the attenuating effects of snow, ice and debris accumulation. Secondly, for tower mounted antennas they reduce the effects of wind thrust by 35%.

All Andrew radomes are lightweight and easy to install—clip directly to the dish rim of existing antennas. Unheated radomes are suitable for all but exceptional cases. In areas where freezing rain occurs, heated radomes can be provided.

SPECIFICATIONS

STANDARD RADOMES

Dia. Feet	Type No.	Attenuation @ 6 kmc. db	VSWR Contribution @ 6 kmc	Thrust at* 30 psf (Flats), lbs.
10	R10	0.4	0.02	1,990
8	R8	0.4	0.02	1,270
6	R6	0.4	0.02	714
4	R4	0.4	0.02	320
2	R2	0.4	0.02	75

*Including antenna

HEATED RADOMES

Dia. Feet	Type No.	Attenuation @ 6 kmc. db	VSWR Contribution @ 6 kmc.	Thrust at* 30 psf. (Flats), lbs.	Power** Reqmts.
10	HR10	0.7	0.02	1,990	3,400 watts
8	HR8	0.7	0.02	1,270	2,400 watts
6	HR6	0.7	0.02	714	1,200 watts
4	HR4	0.7	0.02	320	550 watts
2	HR2	0.7	0.02	75	150 watts

*Including antenna

**Power requirements for HR10 and HR8 are 3 wire single phase 60 cycle 220 volts.

Power requirements for HR6, HR4 and HR2 are single phase 60 cycle 115 v.

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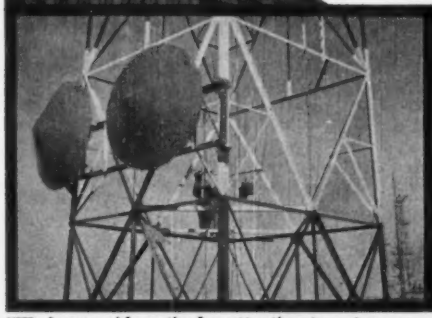
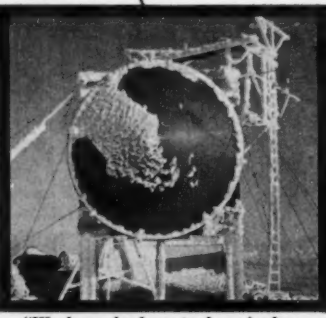
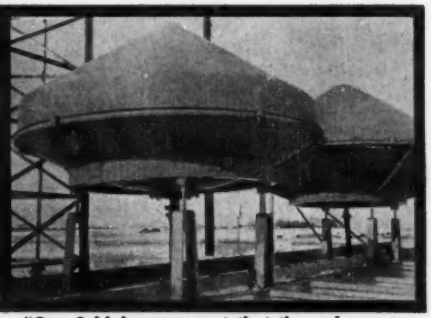


"We have paid particular attention to antennas during high wind conditions of gusts up to 40-60 m.p.h. It is very obvious that these radomes quite materially reduce the wind loading on the parabolas—due to their shape factor." *Washington State Patrol, Kennewick, Washington*



"We have had up to four inches of ice on the radome with practically no reduction of antenna effectiveness." *KLIX-AM-TV, The KLIX Corporation, Twin Falls, Idaho*



"Our field forces report that the radomes produce a signal loss of less than 1 db per antenna. Several radomes were removed and antennas inspected following a heavy snow storm and no snow or ice was found in the antennas." *Natural Gas Pipeline Company of America*

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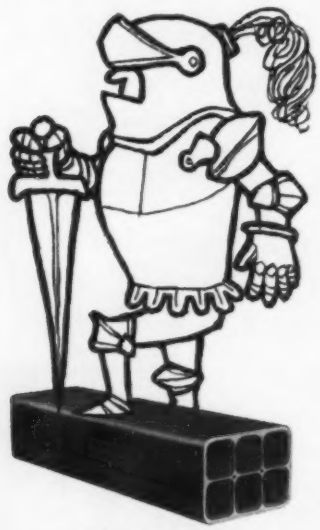

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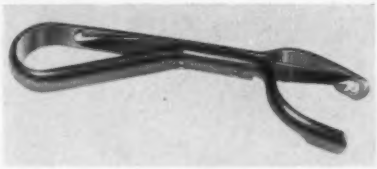
digs in between sheathing and wires, and with the side supports, permits accurate jacket stripping. It handles large and small diameter cables equally well.



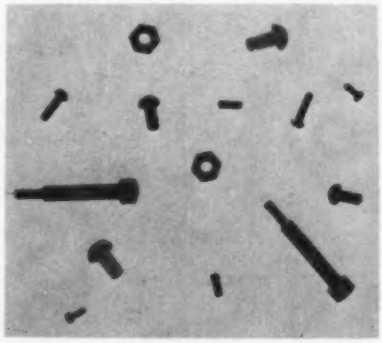
The sharp hook slitter, Neuses says, lets you cut into cable at any point without previously notching through sheathing (a practice hazardous to wire inside—and to hands).

An extra blade is included (as shown) and blades are easily changed, the company reports. The two screws that hold blade in cutting position also secure the extra blade with its cutting end protected until put into position for use. Request NP1348.

•

COLORED FASTENERS—The Plastics division of Anti-Corrosive Metal Products Co., Inc. is offering all-nylon fasteners in any color—plus service in the design and production of special parts made by the employment of screw machines, injection molding and stamping.

Tradenamed Nylo-Fast, these fasteners —said to be of low dielectric constant and high dielectric strength—reduce the number of components in many assemblies by eliminating the need for insulating bushings, washers and/or couplings.



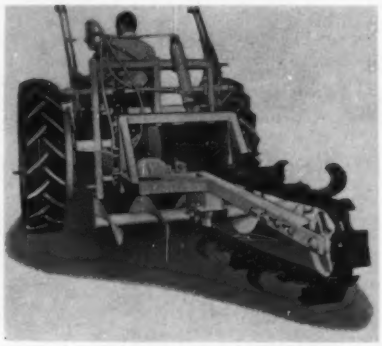
They are claimed to have a weight-strength factor the equivalent of steel and a high resistance to heat, shock, vibration, chemical attack and galling.

This consolidation of several functions in a single fastener is reported to cut assembly cost and permit space saving by reducing "safety arc" space. All stock items are made to American Thread Standards for Unified Threads. Request NP1349.

•

THREE-POINT HITCH DITCHER—The Vermeer Mfg. Co. has recently announced a new model, the 3P Pow-R-Ditcher.

The new ditcher is specifically designed, the company says, to fit all three-point tractor hitches. Built for utilities contractors and municipalities, the new ditcher is claimed to be rugged, quickly attached, economical and capable of digging a wide variety of trenches.



The 3P Pow-R-Ditcher is described as having a digging width of 6 inches to 16 inches wide and will dig to a 4½-foot depth. The digging chain is the same as used on the largest Vermeer Pow-R-Ditchers.

The tractor-mounted ditcher is said to feature a new hydraulic-actuated travel ratchet device that gives full control of digging speed from one control lever. The power is taken from the tractor's hydraulic system.

The PTO shaft is equipped with a double disc friction slip clutch for digging safety. Request NP1350.

C. R. Hammond Head of Raytheon Commercial Sales

Curtis R. Hammond has been appointed to the newly-created post of director of commercial sales development for Raytheon Co., Stuart D. Cowan, vice president-commercial marketing and international services, announces.

The new commercial sales post was established to develop more fully Raytheon's total commercial sales capability. Mr. Hammond will work closely with the manufacturing divisions in maintaining liaison with executives in customer and prospect companies and in coordinating joint divisional sales activities.

Mr. Hammond served during the past year as director of regional commercial administration, supervising the company's marketing centers across the nation.

He was educated as an electrical engineer at the University of Kentucky.

He worked with the Ken-Rad Tube & Lamp Co. and the General Electric

UPDATE

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Rypinski filters are operating in Lenkurt 33 systems in Idaho, California, New Mexico and Wisconsin. The modification cost is about $300.00 per channel end.

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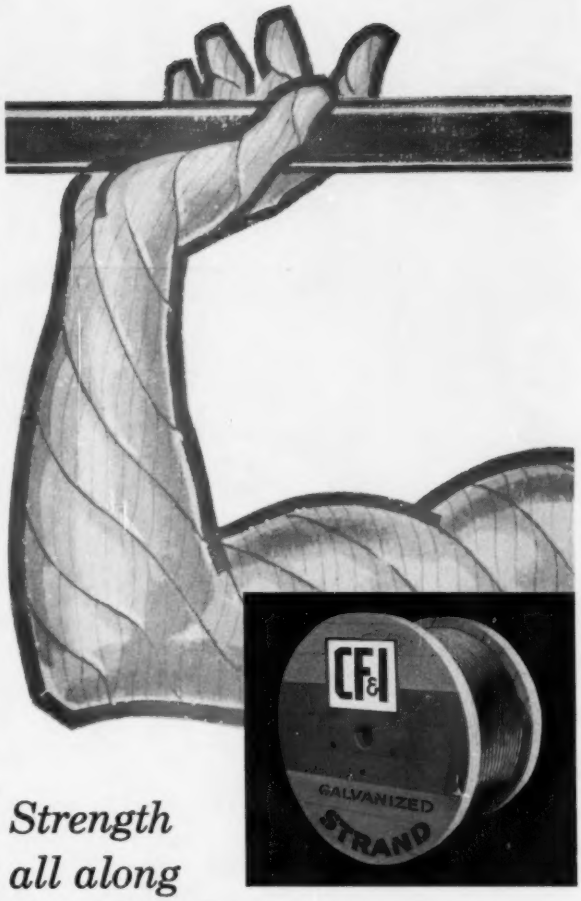

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Co. from 1933 to 1945 in production and sales engineering capacities.

Mr. Hammond joined Raytheon's receiving tube division in 1945. From 1950 to 1958 he served as general sales manager for receiving tubes, industrial tubes, cathode ray tubes, and semiconductor products.

He is a member of the Institute of Radio Engineers.

Krengel Head Commercial Marketing for Lenkurt

Herbert K. Krengel has been appointed commercial marketing manager of Lenkurt Electric Co., Inc., San Carlos, Cal., it was announced recently.

H. K. KRENGEL

In his new position he directs the activities of the commercial products area sales managers, supporting engineering and service departments, sales promotion and advertising, and the engineer, furnish and install (EF&I) project group.

Mr. Krengel has been with the tele-

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communications company since 1950, when he was appointed as an applications engineer. Since then, he has held positions as manager of systems development, sales engineering departments and of the EF&I group, and has most recently served as assistant marketing manager, commercial products division.

Prior to joining Lenkurt, Mr. Krengel spent five years with Western Electric's installation division.

He served during World War II as an Army radar technician.

Jordan Central Manager, International Teletronics

International Teletronics, Inc., 644 Braniff Airways Bldg., Dallas, Tex., marketing and distribution organization for Panhandle transistorized carrier products, has announced the appointment of Weaver Jordan as central regional manager, with headquarters in Warsaw, Ind.

WEAVER JORDAN

Mr. Jordan has had a wide background in the carrier-microwave field. He was first employed in the Setco Division of Stromberg-Carlson Co. in Dallas, as a test technician. Soon after, he was promoted to supervisor of the department.

Later, he was transferred to Rochester, N. Y., and assigned to the carrier-microwave development department. In this capacity, he had numerous development assignments on multiplex systems and wire line carrier equipment.

In 1957, he was promoted to the sales engineering department in Rochester. Mr. Jordan later served as system coordinator for the larger Stromberg-Carlson microwave systems.

In 1959, he resigned from Stromberg-Carlson to go into private engineering and consulting business, locating in Hope, Ark., specializing in carrier-microwave application, sales and installation engineering.

Mr. Jordan was born in Hope, and attended elementary and high school there. He attended college at Tyler (Tex.) Commercial College of Industrial Electronics.

AE Announces Vacation Dates

Automatic Electric Co., its factory, offices and laboratories, will be closed from July 2 to July 19 for the organization's annual vacation period. During the shutdown, only maintenance crews and personnel needed to handle emergency customer orders will be on duty at the Northlake, Ill. plant, subsidiary of General Telephone & Electronics.

Participate in Government

American business companies, acting through their executives and other employes, should take an active part in the political and governmental process, in the opinion of a majority of 198 manufacturing executives participating in a survey conducted by the National Industrial Conference Board.

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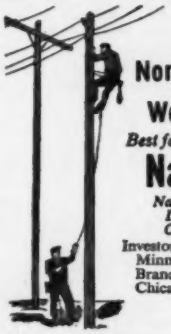

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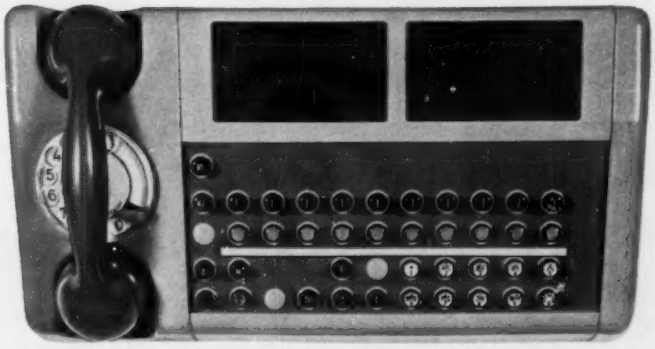

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